ELECTRIC POWER RESEARCH INSTITUTE

ENVIRONMENTAL CONTROL TECHNOLOGY CENTER

REPORT TO THE STEERING COMMITTEE

November 1995

DOE/PC/93256--T24

Approved Final Technical Report

US/DOE Patent Clearance is not Required
Prior to the Publication of this Document

RECEIVED
USDOE/PETC
26 FEB -5 AM 11:03
U.S. DEPARTMENT OF ENERGY
WASHINGTON, D.C. 20585

^{ds}
DISTRIBUTION OF THIS DOCUMENT IS UNLIMITED

MASTER

DISCLAIMER

**Portions of this document may be illegible
in electronic image products. Images are
produced from the best available original
document.**

For further information on:

Facility Operations and Miscellaneous ECTC inquires;

contact - Gary Andes (716) 795-3397

Wet FGD/Toxics Testing, Spray Drying/Dry FGD/Duct Injection technologies;

contact - Richard Rhudy (415) 855-2421

This monthly report is a compilation of monthly progress reports by EPRI contractors (Radian Corporation, Gilbert/Commonwealth) connected with the Environmental Control Technology Center (ECTC). This report is intended to provide timely information to the ECTC co-sponsoring organizations. All data and results should be considered preliminary. Neither EPRI, members of EPRI, Radian, Gilbert/Commonwealth, nor any person acting on behalf of any of them: (a) makes any warranty, express or implied, with respect to the use of any information, apparatus, method, or process disclosed in this report or that any such use may not infringe privately owned rights; or (b) assumes any liabilities with respect to the use of, or for damages resulting from the use of any information, apparatus, method, or process disclosed in this report.

TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	vi
SECTION I FACILITY STATUS.....	1
General.....	1
Pilot FGD System	1
Pilot FGD System Outage Activities	2
Auxiliary Systems.....	3
Financial Report.....	4
SECTION II PILOT AND MINI-PILOT TEST ACTIVITY.....	7
Pilot	7
APPENDIX A Test Schedules	39
APPENDIX B Pilot Process Summary Reports.....	44
APPENDIX C Pilot High Velocity Analytical Summary Results	88
ECTC COSPONSORS DISTRIBUTION	149

LIST OF TABLES

Table

i.	Monthly Operating Costs By Task.....	4
1.	November Process Operating Conditions Summary	14
2.	Pilot High Velocity Phase II Test Conditions and Results	19
3.	Liquid Carryover Tests with Munters and Koch VMEs.....	23

LIST OF FIGURES

Figure

i.	1995 Operation & Maintenance Costs.....	5
1.	Wet FGD Process Flow Diagram for PHV Tests.....	24
2.	Effect of Absorber Gas Velocity on SO ₂ Removal (Baseline Spiral Nozzles, 1300 gpm).....	25
3.	Effect of Absorber Gas Velocity on SO ₂ Removal (Baseline Spiral Nozzles, 650 gpm).....	26
4.	Effect of Absorber Gas Velocity on SO ₂ Removal (Tangential Nozzles, 1700 gpm).....	27
5.	Effect of Absorber Gas Velocity on SO ₂ Removal (Tangential Nozzles, 1300 gpm).....	28
6.	Effect of Absorber Gas Velocity on SO ₂ Removal (Tangential Nozzles, 650 gpm).....	29
7.	Effect of Absorber Gas Velocity on SO ₂ Removal (Very Low Pressure Nozzles, 1700 gpm).....	30
8.	Effect of Absorber Gas Velocity on SO ₂ Removal (Very Low Pressure Nozzles, 1700 gpm).....	31
9.	Effect of Absorber Gas Velocity on SO ₂ Removal (Very Low Pressure Nozzles, 650 gpm).....	32
10.	Effect of Absorber Gas Velocity on SO ₂ Removal with Three Different Nozzle Types (1700 gpm).....	33
11.	Effect of Absorber Gas Velocity on SO ₂ Removal with Three Different Nozzle Types (1300 gpm).....	34
12.	Effect of Absorber Gas Velocity on SO ₂ Removal with Three Different Nozzle Types (650 gpm).....	35
13.	Effect of Absorber Gas Velocity on SO ₂ Removal with DBA (Baseline Spiral Nozzles, 650 gpm).....	36
14.	Effect of Absorber Gas Velocity on SO ₂ Removal with DBA (Tangential Nozzles, 650 gpm).....	37

LIST OF FIGURES

Figure

15. Effect of Mist Eliminator Gas Velocity on Carryover Rate
(Baseline Nozzles, 1700 gpm).....38

EXECUTIVE SUMMARY

Operations and maintenance continued this month at the Electric Power Research Institute's Environmental Control Technology Center. Testing on the 4.0 MW Pilot Wet FGD unit continued this month with the Pilot High Velocity (PHV) and the Trace Element Removal (TER) test blocks. In the High Velocity test block, SO₂ removal and mist eliminator carryover rates were investigated while operating the absorber unit with various spray nozzle types and vertical mist eliminator sections. During the Trace Element Removal test block, the mercury measurement studies involving the EPA Draft Method 29 continued with testing of several impinger solutions.

The 4.0 MW Spray Dryer Absorber system was utilized in the TER test configuration this month while the 1.0 MW Cold-Side Selective Catalytic Reduction (SCR) unit and the 0.4 MW Mini-Pilot Absorber unit remained in a state of cold-standby. A monthly inspection was conducted for all equipment in cold-standby, as well as for the fire safety systems in the SCR building. These inspections will continue to be conducted by the ECTC Operations and Maintenance staff each month.

PILOT TESTING HIGHLIGHTS

The Trace Elements Removal (TER) test block was suspended in November to concentrate all resources to Phase II of the Pilot High Velocity (PHV) test block. Although the TER test block was continued at the end of November, these results will be discussed in next month's progress report.

Phase I of the PHV test block was completed in September of 1994. Phase II of the Pilot High Velocity test block resumed in October and November 1995. These tests were a continuation of the six weeks of PHV testing which began in January 1995. Recall that the earlier testing in 1995 was suspended to make the necessary modifications to the ECTC test facility for gas flows greater than 15 ft/s.

A total of 83 PHV tests were completed on the ECTC 4.0 MW Pilot system in November. The tests in November were performed with baseline, tangential, and very low-pressure (VLP) absorber spray nozzles. Additionally, carryover tests were performed with the Munters and Koch vertical mist eliminators. The PHV tests used the following parameters:

- 140 mM Ca⁺⁺
- 85 mM Mg⁺⁺
- 94% limestone utilization
- 2000 ppm inlet SO₂
- Forced oxidation mode of scrubber operation

LIST OF COMMON ABBREVIATIONS

A-S-H.....	Allen Sherman Hoff
BES.....	Bulk Entrainment Separator
CRG.....	Clean Raw Gas
CLS.....	Clear Liquor Scrubbing
DBA.....	Di-Basic Acid
DRG.....	Dirty Raw Gas
ECTC.....	Environmental Control Technology Center
EDR.....	Electrodialysis Reversal Membrane Unit
ESP.....	Electrostatic Precipator
FF.....	Fabric Filter
FGD.....	Flue Gas Desulfurization
FLRT.....	First Loop Reaction Tank
FRP.....	Fiberglass Reinforced Plastic
G/C.....	Gilbert/Commonwealth Inc.
GEESI.....	General Electric Environmental Services Inc.
HME.....	Horizontal Mist Eliminator
HSSD.....	High Sulfur Spray Dryer
HYPAS.....	Hybrid Pollution Abatement System
ID.....	Induced Draft
L/G.....	Liquid to Gas Ratio, (gal/1000ft ³)
MFT.....	Master Fuel Trip
MRT.....	Main Reaction Tank
NTU.....	Number of Transfer Units
NYSEG.....	New York State Gas & Electric
O&M.....	Operations & Maintenance
PJFF.....	Pulse Jet Fabric Filter
RTD.....	Resistance Temperature Detector
RWST.....	Recycle Water Storage Tank
SCBA.....	Scott Air Packs
SDA.....	Spray Dry Absorber
UMIST.....	Univ. of Manchester Inst. of Science & Technology
VME.....	Vertical Mist Eliminator
VSD.....	Variable Speed Drive
WDPF.....	Westinghouse Distributed Process Control System

SECTION I FACILITY STATUS

GENERAL

The NYSEG Kintigh Station provided flue gas to the Center 96% of the time during this performance period. As the Kintigh Station operated with a variety of coals, fluctuations in the Center's inlet SO₂ concentrations were experienced. The ECTC was off-line this month from 11/6 through 11/8 due to a NYSEG Kintigh Station tube leak outage.

Safety training for the month was conducted by the O&M Superintendent, Maintenance Supervisor and Shift Supervisors. Cold weather protection and slip/trip hazards were the safety topics presented this month. Inspections of the ECTC Facility and safety equipment (SCR air-packs, fire extinguishers, etc.) were completed and recorded this month. All systems were found to be in good condition. By continuing to emphasize safe work habits at the Center, we have raised the total number of days without a lost time injury to 1274 as of 11/30/95.

A safety luncheon was held at the ECTC on November 3, 1995 to meet with the new G/C Compensation Insurance Carrier, CNA. While on-site, the CNA representative reviewed the operations and safety programs of the Center, and presented G/C with two awards for their efforts. They included an award for accomplishing over 3 years (June 1992 through June 1995) without a lost time injury, and an award for the Safety Process enhancements and management efforts that have reduced accident frequency and severity at the ECTC.

The monthly safety meeting with the NYSEG Kintigh Station was held on November 2, 1995 with the ECTC and NYSEG representatives. The topics of discussion for the meeting included: the HazMat Incident Commander refresher course training, the scheduling of American Red Cross CPR and first aid courses (12/95) for HazMat training, and a review of the outage activities completed during the Kintigh Station Fall Outage last month. Additionally, the NYSEG safety meeting representative (Kintigh Station HR Manager) informed the Center that he has accepted an Operations Manager position at the NYSEG Jennison Station and would be designating a new Kintigh Station representative to attend the monthly safety meeting with the ECTC.

PILOT WET FGD SYSTEM

The equivalent and actual availabilities for the ECTC 4.0 MW Pilot Wet FGD System testing this month were 92% and 86% respectively during this period. The Pilot Wet FGD System did not operate during the following periods this month:

- November 6 - 8 for 48 hours due to a NYSEG outage to repair a boiler tube leak.
- November 11 for 14 hours due to system dewatering for DBA removal, and tangential header and nozzle installation.
- November 15 for 14 hours to replace the tangential nozzles with baseline nozzles.
- November 21 for 4 hours to replace the baseline nozzles with very low pressure nozzles.
- November 27 for 20 hours to replace the very low pressure nozzles with low pressure nozzles and to repair the HME.
- November 28 for 4 hours to replace one nozzle that fell off the header.
- November 30 for 2 hours to replace the low pressure nozzles with baseline nozzles.

The Pilot High Velocity (PHV) test block continued this month with the following tests: PHV-204R; PHV-205RR; PHV-206R; PHV-208RR; PHV-210R; PHV-211R; PHV-215; PHV-218; PHV-220; PHV-221; PHV-222; PHV-223; PHV-224; PHV-225; PHV-228; PHV-229; PHV-230; PHV-231; PHV-232; PHV-233; PHV-234; PHV-235; PHV-236; PHV-237; PHV-238; PHV-239; PHV-240; PHV-241; PHV-242; PHV-243; PHV-244; PHV-245; PHV-246; PHV-247; PHV-248; PHV-249; PHV-250; PHV-251; PHV-264; PHV-265; PHV-265R; PHV-266; PHV-267; PHV-268; PHV-269; PHV-270; PHV-271; PHV-277; PHV-278; PHV-279; and PHV-291. These tests were conducted as a series of 4-hour and 24-hour investigations to evaluate SO₂ removal, mist eliminator performance, and spray nozzle performance. During the investigations, the Pilot absorber unit was configured with several different spray nozzle types (baseline, low pressure, very low pressure, or tangential) and vertical mist eliminator sections (Koch or Munters). The operational parameters for the Pilot Wet Scrubber during this test block included: gas flows of 19,900 scfm, 17,400 scfm, 14,900 scfm, and 10,000 scfm; 2000 ppm inlet SO₂; DBA additive spiking to 5000 ppm; recycle slurry flows of 650 gpm, 1300 gpm, and 1700 gpm; 400-550 scfm of oxidation air; and an absorber inlet temperature of 315°F.

The Trace Element Removal (TER) test block resumed at the end of this month with tests T24-N, T24-E, and T24-C. These mercury removal tests were conducted concurrently with the High Velocity testing on the Pilot absorber. For these tests, the same High Velocity operational parameters were followed with the addition of elemental mercury and/or mercuric chloride injection into the dirty raw gas (DRG) duct, and gas sampling at the pilot inlet and outlet locations.

The following maintenance work was completed on the Pilot Wet Scrubber unit during this performance period:

- The Munters and Koch vertical mist eliminators were removed and exchanged for different testing configurations.
- The recirculation nozzles and headers were removed and exchanged for testing with the following nozzles - baseline, low pressure, very low pressure and tangential.
- A wood frame was fabricated and installed in the horizontal mist eliminator to replace a broken section of the FRP frame. The frame will be properly repaired by an FRP contractor in December.
- The FLRT level monitor was inspected, cleaned and calibrated.
- The seal was replaced in pump 9. This was due to normal wear.
- The spray zone pressure transmitter was inspected, cleaned, and calibrated.

MISCELLANEOUS

The Ball Mill operation was normal this month during the preparation of Beachville limestone. The limestone grind prepared for ECTC operations was 90% passing 325 mesh screen. Scheduled maintenance was performed on the Ball Mill hydrocyclone feed pump this month to replace the pump impeller and liners.

The P-5A demonstration project with Watson Process systems and Environmental Systems Corporation (ESC) was interrupted this month due to severe corrosion and material wear in several integral components of the unit. During the Fall Outage last month, an inspection of the P-5A unit and probe assembly was conducted to insure that all of the systems' components were in good working order for the Pilot High Velocity testing. At that time, some minor preventive maintenance was necessary to clean the various components and calibrate the unit before it could be placed in service. As the unit was installed into the Pilot absorber this month, however, difficulties were experienced while trying to calibrate and operate the P-5A to measure the droplet carryover and entrained mist exiting the Pilot Wet Scrubber VME section. A more thorough inspection of the P-5A unit this month revealed corrosion and wear to components which could not be repaired or replaced on-site. Therefore, the P-5A has been shipped to the manufacturer (Environmental Systems Corporation) for their inspection and repair. The unit is scheduled to be returned to the ECTC for testing in January 1996.

The following general maintenance work was completed at the ECTC during this performance period:

- Scheduled maintenance was completed on the facility air compressors.
- Scheduled maintenance was completed on the facility vehicles.
- The ECTC computer network fast path was reconfigured and repaired.

FINANCIAL REPORT

The Financial Report for the four Operations and Maintenance contract tasks are summarized below for the month of November 1995, the year to date, and the contract total. All expenses reported below are expressed in terms of U. S. currency dollars.

Task Definitions:

Task 100: Operations and Maintenance Labor

Task 200: Purchased Materials

Task 300: Engineering Support

Task 400: Training

Table i.
Monthly Operating Costs by Task

	November	Year to Date	Contract Total
Task 100	\$ 99,551	\$ 1,144,235	\$ 13,556,927
Task 200	\$ 13,828	\$ 464,441	\$ 7,882,216
Task 300	\$ 5,403	\$ 61,082	\$ 1,131,118
Task 400	\$ 323	\$ 15,282	\$ 50,086
TOTAL*	\$ 119,105	\$ 1,685,040	\$ 22,620,347

* Includes \$168,455 unbudgeted, contracted cost of Pilot High Velocity modifications in 6/95

The attached graph illustrates the budgeted and actual expenses for ECTC O&M activities through November 1995.

Figure i.
1995 Operation & Maintenance Costs

SECTION II PILOT AND MINI-PILOT TEST ACTIVITY

PILOT

The Trace Elements Removal (TER) test block was suspended in November to concentrate all resources to Phase II of the Pilot High Velocity (PHV) test block. Although the TER test block was continued at the end of November, these results will be discussed in next month's progress report.

Pilot High-Velocity Scrubbing

Phase I of the PHV test block was completed in September of 1994. Phase II of the Pilot High Velocity test block resumed in October and November 1995. These tests were a continuation of the six weeks of PHV testing which began in January 1995. Recall that the earlier testing in 1995 was suspended to make the necessary modifications to the ECTC test facility for gas flows greater than 15 ft/s.

A total of 83 PHV tests were completed on the ECTC 4.0 MW Pilot system in November. The tests in November were performed with baseline, tangential, and very low-pressure (VLP) absorber spray nozzles. Additionally, carryover tests were performed with the Munters and Koch vertical mist eliminators. The PHV tests used the following parameters:

- 140 mM Ca^{++}
- 85 mM Mg^{++}
- 94% limestone utilization
- 2000 ppm inlet SO_2
- Forced oxidation mode of scrubber operation

The basic operating conditions for the 1995 tests differ from those used in 1994 in that feed forward control for reagent addition was used instead of pH control to maintain approximately 94% limestone utilization. The intent of testing with constant limestone utilization was to minimize variability in SO_2 removal due to utilization changes. Also, during the 1994 tests, the highest gas velocity tested was 15 ft/s. The facility modifications made in 1995 have made it possible to maintain 20 ft/s during the Fall test schedule.

Background

Operating FGD systems with higher gas velocities through the scrubber has potential benefits for electric utilities planning their Clean Air Act compliance strategy. For new system designs, a higher gas velocity reduces the scrubber diameter and the corresponding capital costs. In some existing systems operating with gas bypass or with an adjacent uncontrolled unit, SO_2 emissions can be reduced with little capital cost by scrubbing this additional gas in the existing scrubber. To provide utilities

information about FGD system performance at high gas velocities (>10 ft/s), EPRI sponsored Phase I of the five-month Pilot High Velocity (PHV) test program on the 4.0 MW Pilot Wet FGD system in 1994. The primary objectives of EPRI's PHV test program in 1994 were:

- To determine the effect of gas velocity on SO_2 removal efficiency and other FGD performance parameters
- To evaluate the effect of gas velocity on mist eliminator performance for two high-velocity mist eliminator designs
- To determine the effect of liquid rate (L/G) and nozzle type on performance at high flue gas velocities

The PHV data also provided a wide variety of conditions to evaluate the predictive capabilities of FGDPRISM at high flue gas velocities. For this testing, the ECTC's 4.0 MW Pilot Wet FGD system was operated as a countercurrent spray tower with variations in the gas rate, liquid rate, nozzle type, and internal configuration (open tower vs. tray).

The PHV Phase I test block was completed in September 1994 and produced some interesting results. At a constant liquid rate, SO_2 removal efficiency remained nearly constant as the absorber gas velocity was increased from 12 to 15 ft/s. In addition, increasing the Sauter mean diameter (SMD) droplet size from 1500μ to 1900μ using spiral nozzles, and to 3500μ using tangential flow nozzles, did not significantly affect SO_2 removal. Finally, at velocities up to 17 ft/s through the mist eliminators (15 ft/s in the absorber), no significant slurry carryover was observed.

The PHV Phase I test results indicated that operating at higher flue gas velocities had many potential benefits, and further evaluation of the FGD performance at even higher gas velocities was warranted. Unfortunately, due to limitations in the pilot booster fan capacity at the time, absorber velocities higher than 15 ft/s could not be tested. Operating at velocities higher than 15 ft/s was of interest to determine the effect on SO_2 removal efficiency and to determine the velocity at which significant carryover occurred across the mist eliminator system. Testing lower pressure nozzles with a larger droplet size was also of interest.

Based on the evaluation of the 1994 PHV Phase I test results, EPRI decided to conduct a second phase of PHV testing and to evaluate scrubber and mist eliminator performance at even higher velocities (up to 20 ft/s) by making modifications to the pilot plant. The predictive capabilities of the FGDPRISM model were also to be evaluated with data at these higher gas velocities.

Test Block Objectives

The goal of Phase II in the Pilot High Velocity test program was to provide further information about FGD performance at high gas velocity conditions in a

countercurrent spray tower. SO₂ removal efficiency and mist eliminator performance were evaluated over a range of flue gas velocities and liquid rates. Different nozzle types were also tested including a very low-pressure spiral nozzle. The test program continued for approximately one month during October and November 1995. Some of the specific objectives of Phase II were:

- To determine the effect of flue gas velocity on SO₂ removal efficiency and other FGD performance parameters for a countercurrent spray tower operating at velocities up to 20 ft/s.
- To determine the effect of absorber spray nozzle type on SO₂ removal efficiency at velocities up to 20 ft/s.
- To determine the gas velocity at which significant mist eliminator breakthrough occurs for two different chevron-type mist eliminators.
- To provide data for FGDPRISM to further evaluate the predictive capabilities of this model at high gas velocities.
- To repeat specific test conditions evaluated during earlier PHV tests that yielded inconsistent results.

Summary of Operations

A detailed summary of operations for November is presented in Table 1. It was discovered in early January 1995 that the fans were not capable of operation at gas flow rates greater than 15 ft/s without major facility modifications. As a result, some tests with gas rates of 15 ft/s or lower were performed initially. The tests with the higher gas rates were started in October (facility modifications for high velocity testing were completed in June 1995).

Figure 1 shows a simplified process flow diagram for the pilot unit, as configured for the PHV testing. During PHV testing, various recirculation rates required the use of all three absorber spray headers: flow to Header #1 was either zero or 650 gpm, flow to header #3 was always set at 650 gpm, and flow to header #5 was either zero or 400 gpm. A total of 83 tests were completed in November. All tests used the baseline spiral nozzles (BETE FST88XPN). Note that the nozzles on header #5 were always the baseline spiral nozzles (BETE FST88XPN), regardless of the nozzle types on headers #1 and #3.

The large number of tests conducted during November were required to obtain data at 94% limestone utilization. With only a 5% allowable error in reagent feed flows, as well as normal error in SO₂ inlet and outlet values, setting the reagent flow for 94% limestone utilization prior to the test proved to be a difficult task. Difficulty in controlling the solids weight percent in the reaction tank during short tests with wide variations in gas rate and SO₂ pickup rate added to the difficulty in achieving 94% utilization.

In several of the tests performed in November, the absorber pH value was greater than the reaction tank pH value. Although the absorber pH probe has traditionally been more difficult to keep calibrated than the reaction tank pH, differences in the absorber pH were noticed when header #5 was put into use or taken out of service. The proximity of the absorber pH probe to the bottom header appears to have some affect on the measurements. Consequently, the accuracy of the absorber pH measurements was questionable during the PHV tests.

Summary of Results

The test conditions and results for the PHV tests performed in November are summarized in Table 2. Results of the carryover tests with the Munters and Koch mist eliminators are shown in Table 3. Complete analytical data tables and process data summary reports for the tests completed in November are appended to this report.

SO₂ Removal Results

One of the main objectives of the PHV test block was to determine how high-velocity scrubbing affects process performance results, such as SO₂ removal. The SO₂ removal results have been expressed as the number of transfer units (NTU) and are presented in the following subsections which compare the 1995 results with the 1994 data and discuss the effect of nozzle type and DBA addition to the system.

Comparison with 1994 Results

The effect of absorber gas velocity on SO₂ removal is illustrated in Figs. 2 through 9 for both the 1994 tests and the 1995 tests at various liquid rates and nozzle types. In each figure, the limestone utilization measured during each test has been included. Note that limestone utilization was not measured during all of the 1994 tests since the process was controlled by pH and not limestone utilization.

The test results using the baseline spiral nozzles are presented in Figures 2 and 3 at 1300 and 650 gpm, respectively (the 1700 gpm test results were presented in the October 1995 progress report). At a liquid recirculation rate of 1300 gpm, the 1995 results appear to be slightly lower than the 1994 results. This difference may be due to the higher utilizations achieved in 1995. However, the same flattening of the curve at the higher gas velocities (above 15 ft/s) is apparent at both 1300 gpm and 650 gpm (no tests at 650 gpm were performed in 1994 with the baseline nozzles). If the gas velocity did not affect the mass transfer coefficient or droplet hold up, the NTU at 20 ft/s would be expected to be reduced to half of its value at 10 ft/s. At 1300 gpm slurry flow, the decrease in NTU was only from 1.8 to 1.5 as the velocity changed from 10 ft/s to 20 ft/s.

Figures 4, 5, and 6 show the SO₂ removal results for tests run with the tangential flow nozzles. The 1995 data generally correlate well with the 1994 data (due to similar limestone utilizations for both sets of tests). Again, the removal appears to flatten out at the higher gas rates (above 15 ft/s) as with the baseline spiral nozzles.

The results of testing with the very low-pressure spiral nozzles are illustrated in Figures 7, 8, and 9. With these nozzles, the effect of gas velocity on SO₂ removal efficiency was investigated using slurry flow rates of 1700 gpm, 1300 gpm, and 650 gpm, respectively. Note that these nozzles were not used in the 1994 test block. Although there is significant scatter in the data, it appears that the SO₂ removal efficiency actually increases when that gas velocity is increased from 15 to 20 ft/s. This apparent effect might be caused by the increased gas rate and the deformation of the larger droplets (or even the breaking of the large droplets into smaller ones).

Effect of Nozzle Type

Another main objective of the PHV test block was to determine the effect that nozzle type would have on process performance at higher flue gas velocities. The nozzle types were chosen to compare the effects of pressure drop, droplet size, and spray pattern on FGD performance. The specific nozzle process information (obtained from BETE) for the liquid flow rates used during this test block was included in the October 1995 progress report.

In 1995, a new, very low-pressure spiral nozzle was tested at the higher gas rates. Recall that the removal efficiency for the low-pressure spiral nozzle used in 1994 did not deviate significantly from the baseline spiral nozzle results. Consequently, a much lower pressure spiral nozzle was tested in 1995 to determine whether a significant increase in droplet size would effect the SO₂ removal efficiency at the higher gas rates. By changing from the 14 psi baseline spiral nozzle to the 4 psi spiral nozzle, the droplet size increased from 1500 μ to 2600 μ .

Through November, three different nozzles had been evaluated: a baseline spiral nozzle (normally used on the pilot scrubber), a very low-pressure spiral nozzle, and a tangential flow nozzle. Figures 10, 11, and 12 compare the results from each type of nozzle at liquid flow rates of 1700 gpm, 1300 gpm, and 650 gpm, respectively. Notice that, in general, the tangential flow nozzle outperformed the baseline and very low-pressure (VLP) spiral nozzles at all three liquid rates despite a significantly larger droplet size (3500 μ) and a medium range pressure (10 psi). As expected, the VLP spiral nozzle performed poorly when compared with the other two nozzles tested at all three liquid rates.

Effect of DBA

Two sets of tests were completed in November using DBA to produce gas-film-limited mass transfer conditions. At these conditions, limestone

utilization should have very little effect on the SO₂ removal efficiency. Due to the very high SO₂ removal efficiencies observed with DBA, only the very low liquid rate (650 gpm) was tested at these conditions so that changes in removal efficiency could be detected by the existing ECTC equipment.

Figures 13 and 14 illustrate the results with DBA using baseline spiral nozzles and tangential flow nozzles, respectively. Comparing these results to those without DBA (Figures 3 and 6), the use of DBA shows a substantial improvement in SO₂ removal efficiency at all gas velocities. These results indicate that the performance improvements demonstrated at lower velocities can also be achieved at higher gas velocities.

Inspection of Figures 3, 6, 13, and 14 shows that the NTU did not drop off as significantly at the higher velocities with the baseline nozzles as it did with the tangential nozzles, with or without DBA. This indicates that the mass transfer contact area or mass transfer coefficient may be increased to a greater extent with the baseline spiral nozzles. However, at 20 ft/s, the SO₂ removal efficiency was essentially equal for both nozzles. This would still favor the selection of the tangential nozzles because of the lower pressure drop at equal flow rates.

Mist Eliminator Carryover Results

For the 1995 PHV test program, two types of VME carryover measurements were made. Both methods assume that all of the VME carryover is collected in the drain from the HME, approximately 30 feet downstream of the VME outlet (10 vertical feet and 20 horizontal feet). The first method involved taking back-to-back, one-minute, manual measurements for more than 30 minutes using a graduated cylinder and a stopwatch. The second method involved continuously collecting carryover over in a 50 gallon tank and recording the tank level once per hour. In both cases, the average total flow rate from the HME was "corrected" for condensation in the intervening duct work to arrive at the "direct" and "tank level" carryover rates reported in Table 3. The correction for condensation was made by multiplying the total flow rate by the average of the ratios of Mg⁺⁺ and Na⁺⁺ concentrations in the carryover to the concentrations in the reaction tank. This correction factor assumes no significant contribution to carryover from the VME washes since the washes occur for only 40 seconds every 30 minutes.

The ECTC direct and tank-level carryover over measurements from testing with the Munters and Koch vertical mist eliminators are presented as a function of flue gas velocity in Table 3. Carryover at 15 ft/s and 17.5 ft/s were measured below the maximum acceptable carryover rate for both mist eliminator designs. The "acceptable" carryover rate was set at half the NSPS limit (0.015 lb/MMBtu) which corresponds to a carryover rate of about 0.0005 gpm/ft² (assuming that all of the carryover exits the stack, the carryover contains 10 wt% solids, and all of the water evaporates).

Figure 15 shows the results of the carryover tests conducted in November for both mist eliminators at a liquid recirculation rate of 1700 gpm. The results indicate that significant breakthrough occurred at a gas rate of approximately 20 to 22 ft/s through the mist eliminators, or at approximately 18 to 20 ft/s through the absorber. Note also (in Table 3) that the breakthrough was also significant at 1300 gpm for both mist eliminators at 22 ft/s through the VME. These results indicate the gas velocity should not be run above 18 ft/s in the absorber while using either of these two mist eliminators.

Future Tests

Phase II of the PHV test block will continue in December with tests of the low-pressure spiral nozzles to compare current data with the 1994 results. Following the conclusion of the PHV test block, the Trace Elements Removal (TER) test block will continue with testing of the enhanced solubility of mercury in the peroxide impingers. Mercury speciation tests will also be performed with the Tris-buffer impingers in December.

Table 1. November Process Operating Conditions Summary

Date	Test ID#	Process Summary
Wed. 11/1	PHV-215 (20 ft/sec, L/G = 55) Baseline Spiral Nozzles	Liquid carryover test using Munter's vertical mist eliminator. Noticed solids in the collected carryover. This is the last of the carryover tests with the Munter's VMEs.
Thurs. 11/2	PHV-264 (13.5 ft/sec, L/G = 82) PHV-211R (10 ft/sec, L/G = 55) PHV-210R (15 ft/sec, L/G = 37) Baseline Spiral Nozzles	Tests continued using baseline nozzles with recirculation liquid using header #3.
Fri. 11/3	PHV-265 (11.5 ft/sec, L/G = 96) PHV-208RR (20 ft/sec, L/G = 27) PHV-210R (15 ft/sec, L/G = 37) PHV-206R (15 ft/sec, L/G = 74)	Collected additional data at 13.5 ft/sec and 11.5 ft/sec.
Sat. 11/4	PHV-265R (11.5 ft/sec, L/G = 96) PHV-204R (20 ft/sec, L/G = 55) PHV-205RR (17.5 ft/sec, L/G = 63)	Some repeat runs due to previous low reaction tank pH values.
Sun. 11/5	PHV-221 (10 ft/sec, L/G = 55) Baseline Spiral Nozzles and DBA	Spiked DBA to the PFLRT at 5000 ppm and began removal tests with DBA additive.
Mon. 11/6	PHV-220 (15 ft/sec, L/G = 37) PHV-218 (20 ft/sec, L/G = 55)	NYSEG outage beginning at 2200 hrs. to repair a tube leak.
Tue. 11/7		In order to make best use of NYSEG downtime, the recirculation header was replaced and the tangential nozzles were installed. The HME had broken away from its support and a wash nozzle was broken off of the wash header. Solids were discovered on the gas turning vanes in the upper elbow and in the horizontal duct leading to the HME.
Wed. 11/8	PHV-266 (10 ft/sec, L/G = 55) Tangential Nozzles DBA additive	The Munter's vertical mist eliminators were replaced with Koch vertical mist eliminators in preparation for carryover tests with Koch VMEs. The Munter's VMEs were clear of solids. Pilot back on-line at 2000 hrs.

Table 1. November Process Operating Conditions Summary (cont.)

Date	Test ID#	Process Summary
Thurs. 11/9	PHV-267 (15 ft/sec, L/G = 37) PHV-268 (20 ft/sec, L/G = 28) PHV-269 (17.5 ft/sec, L/G = 32)	DBA additive tests. Recirculation pump P-7 operating in manual after tripping off-line. DBA feed dropped off briefly, so the feed line was flushed with hot water and the flow returned to specification.
Fri. 11/10	PHV-270 (20 ft/sec, L/G = 55) PHV-271 (20 ft/sec, L/G = 72) PHV-268R (20 ft/sec, L/G = 28) PHV-267R (15 ft/sec, L/G = 37)	Vacuum belt running simultaneously with the centrifuge at the high blowdown rate required when several 20 ft/sec. tests are run in sequence. DBA tests completed at 1700 hrs. The slurry was transferred to the pilot MRT for dewatering while the PFLRT was filled and flushed twice. The recycle water tank and the mist eliminator recycle water tank were filled and flushed and the recycle system was backflushed from the VMEs.
Sat. 11/11	PHV-245 (17.5 ft/sec, L/G = 63) PHV-244 (20 ft/sec, L/G = 55) Tangential Nozzles	SO ₂ spiking on at 0630 hrs. Blowdown to the centrifuge was started at 1400 hrs.
Sun. 11/12	PHV-246 (15 ft/sec, L/G = 74) PHV-247 (10 ft/sec, L/G = 110) PHV-245R (17.5 ft/sec, L/G = 63) PHV-249 (17.5 ft/sec, L/G = 32) PHV-248 (20 ft/sec, L/G = 28) PHV-250 (15 ft/sec, L/G = 37)	Testing continued with the Tangential nozzles. Calcium concentration had increased to 198 mM so the blowdown to sump was increased. ΔP across the combined VME and HME system showed bad value at 20 ft/sec test.
Mon. 11/13	PHV-251 (10 ft/sec, L/G = 55) PHV-248R (20 ft/sec, L/G = 28) PHV-240 (20 ft/sec, L/G = 72) PHV-241 (17.5 ft/sec, L/G = 82) PHV-242 (15 ft/sec, L/G = 96) PHV-243 (10 ft/sec, L/G = 144)	ΔP across the combined VME and HME reading 4 in. H ₂ O. Morning analysis of PFLRT showed 180 mM Ca ⁺⁺ , so increased blowdown. Afternoon analysis showed 157 mM Ca ⁺⁺ .
Tue. 11/14	PHV-243 (10 ft/sec, L/G = 144) PHV-240R (20 ft/sec, L/G = 72) PHV-244R (20 ft/sec, L/G = 55) PHV-246R (15 ft/sec, L/G = 74) PHV-247R (10 ft/sec, L/G = 110) PHV-249R (17.5 ft/sec, L/G = 32) PHV-250R (15 ft/sec, L/G = 37)	Continued tests with the tangential nozzles.

Table 1. November Process Operating Conditions Summary (cont.)

Date	Test ID#	Process Summary
Wed. 11/15	PHV-245 RR (17.5 ft/sec, L/G = 64)	End of tangential nozzles testing. The pilot was taken off-line and the tangential slurry header was replaced with the baseline header and the baseline spiral nozzles were installed. The HME had broken away from its support again and was temporarily repaired with a wooden frame so testing would not be delayed. Permanent repair will be done in December during a planned ECTC outage. Solids were cleaned out of the horizontal duct leading to the HME. The ESP opacity monitor was cleaned.
Thurs. 11/16	PHV-224 (15 ft/sec, L/G = 96) Baseline Spiral Nozzles	Carryover tests begin with Koch vertical mist eliminators.
Fri. 11/17	PHV-223 (17.5 ft/sec, L/G = 82)	
Sat. 11/18	PHV-222 (20 ft/sec, L/G = 72)	
Sun. 11/19	PHV-225 (20 ft/sec, L/G = 55)	
Mon. 11/20	PHV-224R (15 ft/sec, L/G = 96) PHV-272 (15 ft/sec, L/G = 74) PHV-273 (20 ft/sec, L/G = 55) PHV-274 (17.5 ft/sec, L/G = 63) PHV-275 (11.5 ft/sec, L/G = 74) PHV-276 (10 ft/sec, L/G = 110) Baseline Spiral Nozzles	Repeat of the first carryover test because of a high calculated carryover rate. Since the carryover calculations utilize Ca^{++} and Na^+ concentrations in the carryover liquid, it was suspected that leaching from the wood used to repair the HME biased the results from the first carryover test. Absorber differential pressure transmitter spanned to 30 inches H_2O because the absorber ΔP went off scale at 20 ft/sec. Performed some removal tests at 1300 gpm.
Tue. 11/21	PHV-232 (20 ft/sec, L/G = 55) PHV-233 (17.5 ft/sec, L/G = 63) Very Low Pressure Nozzles	Pilot absorber down to remove baseline nozzles and install the very low pressure nozzles in headers #1 and #3. Daily addition of 100 lbs CaCl_2 with 0.6 gpm blowdown to sump to maintain Ca^{++} , Cl^- , and Mg^{++} concentrations.

Table 1. November Process Operating Conditions Summary (cont.)

Date	Test ID#	Process Summary
Wed. 11/22	PHV-234 (15 ft/sec, L/G = 74) PHV-235 (10 ft/sec, L/G = 110) PHV-233R (17.5 ft/sec, L/G = 63) PHV-238 (15 ft/sec, L/G = 37) PHV-236 (20 ft/sec, L/G = 28) PHV-237 (17.5 ft/sec, L/G = 32)	
Thurs. 11/23	PHV-239 (10 ft/sec, L/G = 55) PHV-236R (20 ft/sec, L/G = 28) PHV-228 (20 ft/sec, L/G = 72) PHV-229 (17.5 ft/sec, L/G = 82) PHV-230 (15 ft/sec, L/G = 96) PHV-231 (10 ft/sec, L/G = 144)	
Fri. 11/24	PHV-228R (20 ft/sec, L/G = 72) PHV-277 (15 ft/sec, L/G = 74) PHV-278 (10 ft/sec, L/G = 110) PHV-279 (20 ft/sec, L/G = 55) PHV-280 (15 ft/sec, L/G = 74)	Repeat some tests in which the utilization was outside the range of 93 - 95%.
Sat. 11/25	PHV-281 (10 ft/sec, L/G = 110) PHV-282 (10 ft/sec, L/G = 144) PHV-283 (15 ft/sec, L/G = 96) PHV-284 (20 ft/sec, L/G = 72) PHV-285 (17.5 ft/sec, L/G = 82)	Continued high velocity testing with very low pressure nozzles.
Sun. 11/26	PHV-286 (10 ft/sec, L/G = 144) PHV-287 (10 ft/sec, L/G = 110) PHV-288 (15 ft/sec, L/G = 74) PHV-289 (10 ft/sec, L/G = 110) PHV-290 (15 ft/sec, L/G = 74)	Continued high velocity testing with very low pressure nozzles.
Mon. 11/27		The pilot absorber was taken off-line and the VLP nozzles were removed and baseline spiral nozzles were installed for high velocity toxic testing. The Koch VME was removed, cleaned and placed back in the absorber. There was some slight solids buildup on the VME, but it was mostly free of solids. When deciding which VME to install, it was discovered that the Munter's first stage VME (8802) had one blade missing that fits along the wall of the absorber.

Table 1. November Process Operating Conditions Summary (cont.)

Date	Test ID#	Process Summary
Tue. 11/28	T24-N Baseline Spiral Nozzles	<p>Pilot absorber was taken off-line when recirc. pump 7 showed 70% output and 650 gpm when ordinarily 90% output is required to produce 650 gpm. Inspection of the header showed that one of the nozzles had come loose from the header. It was replaced with a baseline spiral nozzle that had been removed in January 1995. The duct injection location for mercury and mercuric chloride was moved from the pilot fan inlet to the DRG duct so as to inject into a negative pressure duct. The inlet to the pilot fan is positive pressure during high velocity.</p> <p>Gas sampling at the WS inlet and outlet under high velocity conditions. PFLRT pH started falling so the oxidation air was increased.</p>
Wed. 11/29	T24-E	<p>Gas sampling at the WS inlet and outlet under high velocity conditions with elemental mercury spiking at the DRG. Aspirator for facility inlet O₂ % was flushed after getting high readings.</p>
Thurs. 11/30	T24-C PHV-291	<p>Began high velocity testing with low pressure nozzles.</p> <p>Gas sampling at the WS inlet and outlet under high velocity conditions with mercuric chloride spiking at the DRG. The injector nozzle plugged during the test so the injector box was opened to the duct. This resulted in mercuric chloride spiking at an unspecified rate.</p>

Table 2

Summary of Pilot High Velocity Phase II Test Conditions and Results

Test ID	Absorber Gas Velocity (ft/s)	Slurry Recirc. Rate (gpm)	L/G (gal/macf)	FLRT pH	Absorber pH	Reaction Tank Slurry wt. %	Liquid Calcium (mM)	DBA Conc. (ppm)	SO ₂ Rem'l (%)	SO ₂ Rem'l (NTU)	VME ΔP (in H ₂ O)	Absorber ΔP (in H ₂ O)	Direct Carryover Rate (gpm/l ₂)	HMEC Tank Level Carryover Rate (gpm/l ₂)	LS Loading (g/L)	LS Util. (%)	Reagent Feed Rate (gpm)
Baseline Spiral Nozzles																	
PHV-200	20.0	1700	72	5.59	4.20	11.98	142	-	86.7	2.02	1.10	13.8	-	-	4.7	93.9	2.28
PHV-201	17.5	1700	83	5.54	4.16	12.19	-	-	82.3	1.73	0.40	10.0	-	-	3.4	95.6	1.85
PHV-201R	17.5	1700	83	5.61	4.67	10.67	-	-	85.9	1.96	0.30	9.9	-	-	4.4	95.6	2.25
PHV-202	15.1	1700	96	5.55	4.50	12.78	-	-	82.1	1.72	0.20	7.7	-	-	3.4	95.9	1.55
PHV-203	10.1	1700	144	5.78	4.94	12.50	-	-	90.0	2.30	0.10	4.7	-	-	4.9	94.0	1.14
PHV-204	20.2	1300	55	4.45	3.46	13.03	154	-	67.1	1.11	1.10	11.8	-	-	3.3	96.0	1.53
PHV-205	17.5	1300	63	4.82	3.66	12.41	-	-	74.9	1.38	0.43	8.7	-	-	4.4	94.5	1.63
PHV-205R	17.6	1300	63	5.22	4.53	13.16	-	-	74.0	1.35	0.40	16.5	-	-	4.1	95.0	1.58
PHV-206	15.0	1300	73	5.15	3.77	12.02	-	-	76.8	1.46	0.20	6.6	-	-	4.6	94.0	1.38
PHV-207	10.0	1300	110	5.36	4.33	11.73	120	-	83.9	1.83	0.10	4.0	-	-	4.8	93.5	1.06
PHV-208	20.1	650	27	5.59	4.25	12.40	-	-	39.5	0.50	0.80	8.1	-	-	3.0	96.2	1.09
PHV-208R	20.0	650	28	5.48	4.08	11.41	-	-	35.9	0.44	0.70	8.2	-	-	2.0	97.2	1.10
PHV-209	17.5	650	32	5.84	4.44	10.76	-	-	44.8	0.59	0.30	5.8	-	-	4.2	93.8	1.10
PHV-210	15.0	650	37	5.25	4.00	12.12	-	-	35.7	0.44	0.20	4.5	-	-	1.7	97.8	0.79
PHV-211	10.0	650	55	5.12	3.92	11.05	-	-	42.7	0.56	0.10	2.5	-	-	1.2	98.3	0.63
Carryover Tests using Munters Vertical Mist Eliminators and Baseline Spiral Nozzles																	
PHV-214	15.1	1700	96	5.75	5.25	12.93	141	-	87.7	2.09	0.20	8.0	0.00023	0.00020	4.9	94.2	1.91
PHV-213	17.5	1700	83	5.76	4.66	12.68	141	-	87.9	2.12	0.36	10.5	0.00024	0.00025	5.2	93.7	2.20
PHV-212	20.1	1700	72	5.56	4.81	12.64	137	-	88.0	2.12	1.14	14.8	0.00316	0.00271	4.7	94.2	2.45
PHV-215	20.1	1300	55	5.36	4.40	11.16	132	-	78.2	1.52	1.13	13.0	0.00312	0.00303	4.6	93.5	2.11
Baseline Spiral Nozzles																	
PHV-264	13.5	1300	81	4.95	4.42	11.89	-	-	76.3	1.44	0.15	6.2	-	-	4.6	94.0	1.43
PHV-211R	10.1	650	55	4.99	4.21	11.22	-	-	50.9	0.71	0.09	2.7	-	-	4.3	94.0	0.67
PHV-210R	15.0	650	37	4.81	3.92	11.37	-	-	41.0	0.53	0.19	5.2	-	-	2.6	96.4	0.78
PHV-265	11.5	1300	96	4.79	4.11	12.65	-	-	80.1	1.61	0.11	5.2	-	-	3.0	96.3	1.24
PHV-208RR	20.1	650	27	4.65	3.97	13.38	145	-	44.4	0.59	0.72	10.6	-	-	5.0	94.1	1.25
PHV-210RR	15.0	650	37	5.00	4.01	12.02	-	-	46.5	0.62	0.19	5.7	-	-	4.6	94.1	0.80
PHV-206R	15.0	1300	74	4.97	3.92	12.62	-	-	74.7	1.37	0.19	8.1	-	-	3.4	95.8	1.41
PHV-265R	11.5	1300	96	5.18	3.99	12.50	-	-	84.4	1.86	0.11	5.5	-	-	3.4	95.8	1.29
PHV-204RR	20.0	1300	55	5.34	4.53	13.47	136	-	79.0	1.56	1.08	16.5	-	-	5.0	94.3	2.10
PHV-205RR	17.4	1300	63	5.47	4.52	12.91	-	-	78.7	1.55	0.33	11.2	-	-	5.0	94.0	1.85

Table 2

Summary of Pilot High Velocity Phase II Test Conditions and Results

Test ID	Absorber Gas Velocity (ft/s)	Slurry Recirc. Rate (gpm)	L/G (gal/macf)	FLRT pH	Absorber pH	Reaction Tank Slurry wt. %	Liquid Calcium (mM)	DBA Conc. (ppm)	SO ₂ Rem'l (%)	SO ₂ Rem'l (NTU)	VME ΔP (in H ₂ O)	Absorber ΔP (in H ₂ O)	Direct Carryover Rate (gpm/ft ²)	HMEC Tank Level Carryover Rate (gpm/ft ²)	LS Loading (g/L)	LS Util. (%)	Reagent Feed Rate (gpm)
<i>Baseline Spiral Nozzles with DBA Additive</i>																	
PHV-221	10.0	650	55	5.40	5.04	11.78	159	5506	92.3	2.57	0.10	3.2	-	-	4.5	94.0	1.28
PHV-220	15.1	650	36	5.00	5.00	12.63	-	5519	93.1	2.67	0.19	8.6	-	-	4.2	94.8	2.39
PHV-218	20.1	650	27	4.94	4.73	12.96	-	5263	90.4	2.34	0.74	15.3	-	-	5.4	93.5	2.79
<i>Tangential Nozzles with DBA Additive</i>																	
PHV-266	10.0	650	55	5.40	5.28	12.56	178	5307	94.3	2.87	0.12	2.6	-	-	4.7	94.2	1.25
PHV-267	15.1	650	37	5.06	4.97	14.30	149	5755	91.4	2.45	0.25	5.1	-	-	3.5	96.3	1.83
PHV-268	20.2	650	27	4.85	4.61	13.62	-	-	90.5	2.35	0.62	9.9	-	-	4.4	95.0	2.50
PHV-269	17.6	650	31	4.94	4.74	13.68	-	-	91.1	2.42	0.37	7.3	-	-	4.5	94.9	2.20
PHV-270	20.2	1300	55	4.77	4.66	12.93	-	-	98.1	4.01	0.86	15.2	-	-	5.2	93.7	2.70
PHV-271	20.3	1700	71	4.92	4.88	12.05	145	5461	99.8	6.41	0.85	19.4	-	-	4.8	93.8	2.79
PHV-268R	20.2	650	27	4.86	4.64	13.20	-	-	88.9	2.21	0.60	15.7	-	-	4.8	94.4	2.55
PHV-267R	15.1	650	37	4.86	4.26	12.42	-	5303	90.3	2.33	0.23	7.2	-	-	2.9	96.3	2.15
<i>Tangential Nozzles</i>																	
PHV-245	17.7	1300	63	5.11	3.96	12.34	212	-	61.4	0.95	0.37	15.6	-	-	2.8	94.7	1.68
PHV-244	20.2	1300	55	4.97	3.91	13.77	-	-	58.1	0.87	0.80	11.8	-	-	1.2	98.6	1.75
PHV-246	15.0	1300	74	4.39	3.74	13.47	-	-	59.3	0.90	0.25	10.9	-	-	2.1	99.2	1.33
PHV-247	10.0	1300	110	5.32	4.60	13.74	-	-	83.5	1.80	0.12	5.2	-	-	1.2	98.3	1.25
PHV-245R	17.6	1300	63	5.25	4.19	13.64	198	-	71.0	1.24	0.38	16.4	-	-	2.1	96.6	1.90
PHV-249	17.6	650	31	5.64	4.15	11.79	-	-	41.0	0.53	0.36	12.7	-	-	2.0	96.9	1.13
PHV-248	20.1	650	27	5.80	4.27	12.77	-	-	42.1	0.55	0.57	18.8	-	-	2.1	96.1	1.33
PHV-250	15.0	650	37	5.96	4.46	12.38	-	-	45.9	0.61	0.24	10.7	-	-	2.0	95.6	1.11
PHV-251	10.0	650	55	6.11	5.02	12.79	-	-	56.0	0.82	0.10	4.7	-	-	2.7	94.6	0.90
PHV-248R	20.0	650	28	5.92	4.58	12.90	181	-	48.7	0.67	0.59	8.3	-	-	2.9	94.3	1.50
PHV-240	20.1	1700	72	5.49	4.82	14.28	-	-	83.4	1.80	0.86	15.2	-	-	2.7	95.2	2.35
PHV-241	17.4	1700	83	5.58	4.72	13.49	157	-	84.0	1.83	0.38	11.1	-	-	3.8	95.6	2.19
PHV-242	14.9	1700	97	5.74	4.98	13.00	-	-	86.1	1.98	0.25	8.5	-	-	4.0	95.2	1.80
PHV-243	10.1	1700	143	5.89	5.22	13.05	-	-	91.8	2.51	0.11	4.7	-	-	4.1	95.1	1.24
PHV-240R	20.1	1700	72	5.67	4.83	13.92	-	-	85.2	1.91	0.86	15.2	-	-	4.5	95.1	2.30
PHV-244R	20.1	1300	55	5.72	4.73	12.04	140	-	78.5	1.54	0.89	14.1	-	-	4.3	94.2	2.23
PHV-246R	15.1	1300	73	5.98	4.98	12.43	-	-	82.7	1.76	0.25	7.9	-	-	5.7	92.9	1.80
PHV-247R	10.1	1300	110	5.97	5.29	12.70	-	-	89.1	2.22	0.11	4.4	-	-	5.4	93.4	1.18
PHV-249R	17.6	650	31	6.02	4.83	11.10	-	-	49.0	0.67	0.37	7.4	-	-	3.9	94.5	1.20
PHV-250R	15.1	650	37	6.13	4.96	11.34	-	-	51.1	0.71	0.26	5.6	-	-	4.4	94.0	1.12
PHV-245RR	17.6	1300	63	5.78	4.83	12.44	-	-	76.6	1.45	0.39	10.6	-	-	3.7	95.3	1.80

Table 2

Summary of Pilot High Velocity Phase II Test Conditions and Results

Test ID	Absorber Gas Velocity (ft/s)	Slurry Reclrc. Rate (gpm)	L/G (gal/macf)	FLRT pH	Absorber pH	Reaction Tank Slurry wt. %	Liquid Calcium (mM)	DBA Conc. (ppm)	SO2 Rem'l (%)	SO2 Rem'l (NTU)	VME ΔP (in H2O)	Absorber ΔP (in H2O)	Direct Carryover Rate (gpm/ft2)	HMEC Tank Level Carryover Rate (gpm/ft2)	LS Loading (g/L)	LS Util. (%)	Reagent Feed Rate (gpm)
<i>Carryover Tests using Koch Vertical Mist Eliminators and Baseline Nozzles</i>																	
PHV-224	15.0	1700	97	5.87	5.02	12.16	127	-	84.1	1.84	0.26	8.9	0.00054	0.00064	4.8	93.8	1.80
PHV-223	17.6	1700	82	5.68	4.98	12.01	137	-	85.5	1.94	0.43	18.1	0.00021	0.00019	4.3	94.5	2.09
PHV-222	20.3	1700	71	5.66	4.73	12.15	141	-	86.2	1.98	0.94	12.1	0.00655	0.00609	3.9	95.0	2.76
PHV-225	20.2	1300	55	5.67	4.74	11.30	146	-	74.3	1.36	0.94	20.3	0.00692	0.00717	4.1	94.3	2.40
PHV-224R	15.1	1700	96	5.78	4.84	12.41	142	-	84.0	1.83	0.30	12.0	0.00042	0.00047	4.7	94.1	2.06
<i>Baseline Spiral Nozzles</i>																	
PHV-272	15.1	1300	73	5.83	4.82	11.79	-	-	72.5	1.29	0.30	11.0	-	-	4.3	94.2	1.78
PHV-273	20.2	1300	55	5.68	4.91	12.27	-	-	73.6	1.33	0.96	20.5	-	-	3.9	94.9	2.40
PHV-274	17.5	1300	63	5.41	4.41	12.13	-	-	62.7	0.99	0.50	14.4	-	-	1.6	97.9	2.25
PHV-275	11.5	1300	96	5.83	4.85	11.55	-	-	78.8	1.55	0.17	5.9	-	-	3.8	94.9	1.60
PHV-276	10.1	1300	110	5.93	5.33	11.55	141	-	80.8	1.65	0.15	4.6	-	-	4.5	93.9	1.36
<i>Very Low Pressure Nozzles</i>																	
PHV-232	20.3	1300	54	5.81	5.04	11.42	-	-	78.9	1.56	0.93	19.4	-	-	5.4	92.6	2.70
PHV-233	17.5	1300	63	5.90	5.01	14.66	136	-	72.1	1.28	0.44	13.5	-	-	8.3	91.5	1.89
PHV-234	14.9	1300	74	6.04	4.83	12.86	-	-	72.8	1.30	0.30	8.8	-	-	9.0	89.4	1.67
PHV-235	9.9	1300	111	6.06	4.72	11.54	-	-	80.3	1.63	0.13	3.9	-	-	8.0	89.4	1.20
PHV-233R	17.6	1300	63	5.73	4.91	12.48	-	-	70.0	1.20	0.45	13.3	-	-	5.6	93.0	1.69
PHV-238	15.1	650	37	5.93	4.78	10.61	-	-	45.3	0.60	0.31	7.5	-	-	4.8	92.9	0.96
PHV-236	20.2	650	27	5.81	4.91	11.89	-	-	41.2	0.53	0.68	16.2	-	-	4.8	93.8	1.06
PHV-237	17.6	650	31	5.78	4.72	12.59	-	-	40.0	0.51	0.44	12.7	-	-	4.3	94.6	0.93
PHV-239	10.0	650	55	5.86	4.89	10.67	-	-	51.3	0.72	0.14	3.2	-	-	3.2	95.2	0.74
PHV-236R	20.2	650	27	5.85	4.79	11.27	-	-	43.7	0.57	0.69	16.5	-	-	4.8	93.4	1.26
PHV-228	20.3	1700	71	5.58	5.21	13.19	-	-	83.2	1.78	0.89	21.9	-	-	5.6	93.5	2.62
PHV-229	17.6	1700	82	5.76	5.32	13.19	-	-	85.2	1.91	0.50	15.0	-	-	7.4	91.4	2.33
PHV-230	15.1	1700	96	5.84	6.15	15.20	-	-	81.8	1.71	0.33	10.6	-	-	9.8	90.3	1.93
PHV-231	10.0	1700	144	5.93	6.21	14.53	-	-	87.6	2.09	0.14	4.8	-	-	10.7	89.1	1.35
PHV-228R	20.1	1700	72	5.80	5.98	12.91	-	-	90.5	2.36	0.95	22.0	-	-	9.8	88.5	2.79
PHV-277	15.0	1300	74	5.87	5.27	12.09	139	-	73.7	1.33	0.32	9.5	-	-	8.8	88.9	1.70
PHV-278	10.1	1300	110	5.95	4.80	12.61	-	-	82.9	1.77	0.15	4.3	-	-	7.9	90.3	1.18
PHV-279	20.2	1300	55	5.59	5.75	11.76	-	-	73.0	1.31	0.97	18.3	-	-	4.9	93.5	2.00
PHV-280	15.1	1300	73	5.77	5.26	12.01	-	-	69.9	1.20	0.38	8.9	-	-	5.9	92.4	1.58
PHV-281	10.1	1300	110	5.83	4.60	11.75	-	-	80.4	1.63	0.14	4.0	-	-	5.7	92.4	1.16
PHV-282	10.0	1700	144	5.83	6.32	14.72	-	-	88.4	2.16	0.14	4.7	-	-	7.4	92.3	1.30
PHV-283	15.1	1700	96	5.77	6.31	13.19	-	-	80.8	1.65	0.33	9.8	-	-	5.3	93.8	1.59
PHV-284	20.2	1700	71	5.58	5.97	12.60	-	-	83.6	1.81	0.93	20.7	-	-	5.0	93.8	2.37
PHV-285	17.6	1700	82	5.57	5.98	14.20	-	-	82.0	1.72	0.52	15.3	-	-	5.2	94.4	2.00

Table 2

Summary of Pilot High Velocity Phase II Test Conditions and Results

Test ID	Absorber Gas Velocity (ft/s)	Slurry Recirc. Rate (gpm)	L/G (gal/macf)	FLRT pH	Absorber pH	Reaction Tank Slurry wt. %	Liquid Calcium (mM)	DBA Conc. (ppm)	SO ₂ Rem'l (%)	SO ₂ Rem'l (NTU)	VME ΔP (in H ₂ O)	Absorber ΔP (in H ₂ O)	Direct Carryover Rate (gpm/ft ²)	HMEC Tank Level Carryover Rate (gpm/ft ²)	LS Loading (g/L)	LS Util. (%)	Reagent Feed Rate (gpm)
<i>Very Low Pressure Nozzles</i>																	
PHV-286	10.1	1700	143	5.67	6.07	15.02	-	-	86.0	1.97	0.15	4.8	-	-	4.7	95.1	1.21
PHV-287	10.1	1300	110	5.65	4.47	15.14	-	-	76.3	1.44	0.15	4.1	-	-	5.4	94.6	1.03
PHV-288	15.1	1300	73	5.58	4.73	11.34	148	-	60.9	0.94	0.33	8.8	-	-	2.4	96.6	1.25
PHV-289	10.0	1300	110	5.94	5.23	12.67	-	-	79.2	1.57	0.14	4.5	-	-	4.9	94.0	1.20
PHV-290	15.1	1300	73	5.67	5.21	12.65	-	-	63.0	1.00	0.33	9.1	-	-	3.4	95.8	1.18

Table 3

Liquid Carry-over Tests with Munters and Koch Vertical Mist Eliminators

Test	Absorber Gas Velocity (ft/sec)	VME Velocity (ft/sec)	Recirculating Slurry (gpm)	Direct Measurement (gpm/ft ²)	Tank Level Measurement (gpm/ft ²)
<i>Munters Vertical Mist Eliminators</i>					
<i>1995 Fall</i>					
PHV-214	15	16.6	1700	0.00023	0.00020
PHV-213	17.5	19.4	1700	0.00024	0.00025
PHV-212	20	22.2	1700	0.00316	0.00271
PHV-215	20	22.2	1300	0.00312	0.00303
<i>1994</i>					
PHV-A7	15.1	16.7	1300	0.00053	0.00030
PHV-A8	15.1	16.7	1700	0.00029	0.00027
<i>Koch Mist Eliminator</i>					
<i>1995 Fall</i>					
PHV-224R	15.0	16.6	1700	0.00024	0.00042
PHV-223	17.5	19.4	1700	0.00021	0.00019
PHV-222	20.0	22.2	1700	0.00655	0.00509
PHV-225	20.0	22.2	1300	0.00692	0.00717
<i>1994</i>					
PHV-B7	15	16.6	1300	0.00036	0.00034
PHV-B8	15.1	16.7	1700	0.00035	0.00035

Figure 1. Wet FGD Process Flow Diagram for PHV Tests

Figure 2. Effect of Absorber Gas Velocity on SO₂ Removal (Baseline Spiral Nozzles, 1300 gpm)

Figure 3. Effect of Absorber Gas Velocity on SO_2 Removal
(Baseline Spiral Nozzles, 650 gpm)

Figure 4. Effect of Absorber Gas Velocity on SO_2 Removal (Tangential Nozzles, 1700 gpm)

Figure 5. Effect of Absorber Gas Velocity on SO_2 Removal (Tangential Nozzles, 1300 gpm)

Figure 6. Effect of Absorber Gas Velocity on SO_2 Removal (Tangential Nozzles, 650 gpm)

Figure 7. Effect of Absorber Gas Velocity on SO_2 Removal in 1995 Tests
(Very Low Pressure Nozzles, 1700 gpm)

Figure 8. Effect of Absorber Gas Velocity on SO₂ Removal in 1995 Tests
(Very Low Pressure Nozzles, 1300 gpm)

Figure 9. Effect of Absorber Gas Velocity on SO_2 Removal in 1995 Tests
(Very Low Pressure Nozzles, 650 gpm)

Figure 10. Effect of Absorber Gas Velocity on SO_2 Removal With Three Nozzle Types (1700 gpm)

Figure 11. Effect of Absorber Gas Velocity on SO_2 Removal With Three Different Nozzles (1300 gpm)

Figure 12. Effect of Absorber Gas Velocity on SO_2 Removal With Three Different Nozzles (650 gpm)

Figure 13. Effect of Absorber Gas Velocity on SO₂ Removal with DBA (Baseline Spiral Nozzles, 650 gpm)

Figure 14. Effect of Absorber Gas Velocity on SO₂ Removal with DBA (Tangential Nozzles, 650 gpm)

**Figure 15. Effect of Mist Eliminator Gas Velocity on Carryover Rate
(Baseline Nozzles, 1700 gpm)**

APPENDIX A
TEST SCHEDULES

EPRI ENVIRONMENTAL CONTROL TECHNOLOGY CENTER TEST CALENDAR

November 1995 (Updated Nov. 27)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			1 High Velocity Phase II PHV-215 Carryover Test 20 ft/sec, 1300 gpm Munter's ME	2 High Velocity Phase II PHV-264,211R,210R Various Rates Baseline Nozzles	3 High Velocity Phase II PHV-265,208RR PHV-210RR,206R Various Rates Baseline Nozzles	4 High Velocity Phase II PHV-265R,204R PHV-205RR Various Rates Baseline Nozzles
5 High Velocity Phase II PHV-221 10 ft/sec, 650 gpm Baseline Nozzles DBA Additive	6 High Velocity Phase II PHV-220,218 Baseline Nozzles DBA Additive	7 High Velocity Phase II NYSEG OUTAGE Installation of Tangential Nozzles	8 High Velocity Phase II Pilot Off-line Installation of Koch Mist Eliminators	9 High Velocity Phase II PHV-266,267 PHV-268,269 Tangential Nozzles DBA Additive	10 High Velocity Phase II PHV-270,271 PHV-269R,267R Tangential Nozzles DBA Additive	11 High Velocity Phase II Pilot Start Up After DBA Dump Tangential Nozzles Koch ME
12 High Velocity Phase II PHV-246,247,245R 249,248,250 Various Rates Tangential Nozzles	13 High Velocity Phase II PHV-251,248R,240 241,242,243 Various Rates Tangential Nozzles	14 High Velocity Phase II PHV-240R,244R,246R 247R,249R,250R Various Rates Tangential Nozzles	15 High Velocity Phase II PHV-245RR,224	16 High Velocity Phase II PHV-224 Carryover Test 15 ft/sec, 1700 gpm Koch ME	17 High Velocity Phase II PHV-223 Carryover Test 17.5 ft/sec, 1700 gpm Koch ME	18 High Velocity Phase II PHV-222 Carryover Test 20 ft/sec, 1700 gpm Koch ME
19 High Velocity Phase II PHV-225 Carryover Test 20 ft/sec, 1300 gpm Koch ME	20 High Velocity Phase II PHV-224R PHV-272,273,274 Carryover Test 15 ft/sec, 1700 gpm Koch ME	21 High Velocity Phase II PHV-275,276,232 Baseline Nozzles PHV-232,233 VLP Nozzles	22 High Velocity Phase II PHV-234,235,233R 238, 236, 237 Various Rates VLP Nozzles	23 High Velocity Phase II PHV-239, 236R, 228 229, 230, 231 Various Rates VLP Nozzles	24 High Velocity Phase II PHV-228R, 277, 278 279, 280 Various Rates VLP Nozzles	25 High Velocity Phase II PHV-281, 282, 283 284, 285 Various Rates VLP Nozzles
26 High Velocity Phase II PHV-286, 287, 288 289 Various Rates VLP Nozzles	27 High Velocity Phase II PHV-290 Change to Baseline Nozzles	28 Trace Element Rem. T24 High Velocity Rem. No Spiking	29 Trace Element Rem. T24 High Velocity Rem. Hg(0) Spiking	30 Trace Element Rem. T24 High Velocity Rem. HgCl ₂ Spiking		

EPRI ENVIRONMENTAL CONTROL TECHNOLOGY CENTER TEST CALENDAR

December 1995 (Updated Dec. 27)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1 High Velocity Phase II PHV-291, 293 Various Rates Low Pressure Nozzles	2 High Velocity Phase II PHV-293 15 ft/sec, 1700 gpm Low Pressure Nozzles
3 High Velocity Phase II PHV-294 10 ft/sec, 1700 gpm Low Pressure Nozzles	4 High Velocity Phase II PHV-298 ----- Trace Element Rem. T25-NY Tris Comp. at WS In. Aqueous Hg Spike	5 High Velocity Phase II PHV-297 15 ft/sec, 1300 gpm Low Pressure Nozzles	6 High Velocity Phase II PHV-300 ----- Trace Element Rem. T26-C Tris Comp. at WS In. HgCl ₂ Spiking	7 High Velocity Phase II PHV-299 ----- Trace Element Rem. T27-C Tris/EDTA at WS In. HgCl ₂ Spiking	8 High Velocity Phase II PHV-303 ----- Trace Element Rem. T28-E Tris Comp. at WS In. Hg(0) Spiking	9 High Velocity Phase II PHV-304 15 ft/sec, 1700 gpm Low Pressure Nozzles
10 High Velocity Phase II PHV-305 15 ft/sec, 1300 gpm Low Pressure Nozzles	11 High Velocity Phase II PHV-306 ----- Trace Element Rem. T29-IY* Enhanced Solubility Intratraining Spiking	12 Trace Element Rem. T30-IY* Enhanced Solubility Intratraining Spiking	13 Trace Element Rem. Gas Path modifications to change from High Velocity configuration to PJFF Testing	14 Trace Element Rem. Gas Path modifications to change from High Velocity configuration to PJFF Testing	15 Trace Element Rem. Gas Path modifications to change from High Velocity configuration to PJFF Testing	16 Trace Element Rem.
17 Trace Element Rem.	18 Trace Element Rem. T31-IX Tris Imping. at WS In. Intratraining Hg(0) Spiking	19 Trace Element Rem. T32-PJFF Darco Carbon on PJFF 10000:1 C:Hg	20 Trace Element Rem. T33-PJFF, T34-PJFF Darco Carbon on PJFF Time Effect and 20000:1 C:Hg	21 Trace Element Rem. T35-PJFF CaCl ₂ /Carbon on PJFF 10000:1 C:Hg	22 ECTC Outage	23 ECTC Outage
24 ECTC Outage	25 ECTC Outage	26 ECTC Outage	27 ECTC Outage	28 ECTC Outage	29 ECTC Outage	30 ECTC Outage
31 ECTC Outage						

EPRI ENVIRONMENTAL CONTROL TECHNOLOGY CENTER TEST CALENDAR

January 1996 (Updated Jan. 1)

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
	1 Trace Element Rem.	2 Trace Element Rem. T36 Darco carbon on filter Std M29 Train	3 Trace Element Rem. T37 Ground Coal on filter Std M29 Train	4 Trace Element Rem. T38 Sodium Sulfide on filter Std M29 Train	5 Trace Element Rem.	6 Trace Element Rem.
7 Trace Element Rem.	8 Trace Element Rem. T39 Ferric Chloride on filter Std M29 Train	9 Trace Element Rem. T40 Chromium Chloride on filter Std M29 Train	10 Trace Element Rem. T41 Feasibility of Tris-EDTA/ Permanganate Train	11 Trace Element Rem. T42 Speciation Test Tris impingers no Hg spiking	12 Trace Element Rem.	13 Trace Element Rem.
14 Trace Element Rem.	15 Trace Element Rem. T43 Speciation Test Tris impingers Hg(0) spiking	16 Trace Element Rem. T44 Speciation Test Tris impingers HgCl ₂ spiking	17 Trace Element Rem. T45 Hg(0) injection into Clean Gas after ESP Baseline	18 Trace Element Rem. T46 Hg(0) injection into DRG before ESP High ash conc.	19 Trace Element Rem.	20 Trace Element Rem.
21 Trace Element Rem.	22 Trace Element Rem. T47 Gas Velocity Effect 11000 scfm Hg(0) inject. at DRG	23 Trace Element Rem. T48 Gas Velocity Effect 13000 scfm Hg(0) inject. at DRG	24 Trace Element Rem. T49 ESP Effect (1 field) Hg(0) inject. at DRG	25 Trace Element Rem. T50 ESP Effect (5 fields) Hg(0) inject. at DRG	26 Trace Element Rem. Convert to SDA/PJFF/Wet FGD Configuration	27 Trace Element Rem.
28 Trace Element Rem.	29 Trace Element Rem. Convert to SDA/PJFF/Wet FGD Configuration	30 Trace Element Rem. T51 Hg(0) injection into Clean Gas after PJFF Baseline	31 Trace Element Rem. T52 Hg(0) injection into DRG before PJFF High ash conc.			

November 1995

PILOT

MINI-PILOT

1994											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
UNIT DOWN		SUNCOR	High Velocity Scrubbing	TECO High Vel. Packing	High Velocity Scrubbing (B&W tray testing)	Air Toxics Tests	Outage	Air Toxics Tests			
Limestone CLS Phase II (cont.)	Redox Sulfur testing	LCLS Phase II (cont.)	UNIT DOWN	SUNCOR II	UNIT DOWN						

PILOT

MINI-PILOT

1995											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
High-Velocity FGD Testing		Lime/DBA Gypsum tests	Carbon Injection	Wet FGD Toxics Testing			Carbon Injection	Wet FGD Toxics Testing- Pet coke	Outage	Carbon Injection	High-Velocity FGD Testing
UNIT DOWN					Lime/DBA Gypsum tests		UNIT DOWN				

PILOT

MINI-PILOT

1996											
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Wet FGD Toxics Testing			PRDA - Mercury and HAPs Control			Wet FGD Toxics Testing			PRDA - Clear Liquor FGD Testing		
UNIT DOWN	PRDA - Condensing Heat Exchanger (CHX) Testing										

ECTC Pilot-scale Testing Schedule ('94-'96)

APPENDIX B

PILOT TESTING PROCESS SUMMARY REPORTS

PHV-214 Process Summary Report
(10/29/95 19:00:00 to 10/30/95 11:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	87.7	88.4	86.3	0.5	16
SO2 Removal (NTU)	2.09	2.15	1.99	0.04	16
L/G Ratio (gal/macf)	96	96	96	0	16
Reaction Tank pH	5.75	5.78	5.70	0.02	16
Absorber pH	5.25	5.39	4.83	0.18	16
Flue Gas Flow Rate (scfm)	14900	14905	14893	3	16
Header 1 Flow (gpm)	650	650	650	0	16
Header 3 Flow (gpm)	650	650	650	0	16
Header 5 Flow (gpm)	400	400	400	0	16
Blowdown to Sump Rate (gpm)	0.63	0.63	0.63	0.00	16
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	10.01	10.20	9.08	0.31	16
Reagent Feed to FLRT (gpm)	1.91	1.93	1.86	0.02	16
Facility Inlet SO2 Conc. (ppm)	1485	1642	1137	143	16
Inlet SO2 Concentration (ppm)	2000	2009	1989	6	16
Outlet SO2 Concentration (ppm)	232	256	218	10	16
Inlet O2 Concentration (%)	7.58	9.81	6.54	0.99	16
Outlet O2 Concentration (%)	7.29	9.32	6.34	0.92	16
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.0	0.03	16
Inlet Gas Temperature (F)	313	316	305	3	16
Outlet Gas Temperature (F)	123	125	121	1	16
SO2 Absorbed (mmole/L)	4.86	4.92	4.78	0.04	16
Solids Residence Time (hrs)	8.5	8.7	8.4	0.1	16
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	16
Absorber Pressure Drop (in H2O)	7.95	8.00	7.90	0.02	16
Spray Zone Pressure Drop (in H2O)	4.10	4.13	4.07	0.02	16
VME Pressure Drop (in H2O)	0.20	0.28	0.19	0.02	16
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	16
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	537	686	241	143	16

PHV-213 Process Summary Report
(10/30/95 20:00:00 to 10/31/95 11:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	87.9	88.9	86.5	0.7	15
SO2 Removal (NTU)	2.12	2.20	2.01	0.06	15
L/G Ratio (gal/macf)	83	83	82	0	15
Reaction Tank pH	5.76	5.79	5.71	0.02	15
Absorber pH	4.66	5.26	4.40	0.28	15
Flue Gas Flow Rate (scfm)	17400	17404	17395	2	15
Header 1 Flow (gpm)	650	650	650	0	15
Header 3 Flow (gpm)	650	650	650	0	15
Header 5 Flow (gpm)	400	400	400	0	15
Blowdown to Sump Rate (gpm)	0.70	1.07	0.42	0.16	15
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.14	11.20	10.95	0.08	15
Reagent Feed to FLRT (gpm)	2.20	2.20	2.19	0.00	15
Facility Inlet SO2 Conc. (ppm)	1323	1513	998	175	15
Inlet SO2 Concentration (ppm)	2000	2018	1987	8	15
Outlet SO2 Concentration (ppm)	226	251	208	13	15
Inlet O2 Concentration (%)	9.22	12.01	7.39	1.51	15
Outlet O2 Concentration (%)	8.82	11.49	7.03	1.43	15
Absorber Gas Velocity (ft/sec)	17.5	17.6	17.4	0.05	15
Inlet Gas Temperature (F)	317	325	314	3	15
Outlet Gas Temperature (F)	122	125	119	2	15
SO2 Absorbed (mmole/L)	5.70	5.77	5.59	0.05	15
Solids Residence Time (hrs)	7.3	7.4	7.2	0.1	15
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	15
Absorber Pressure Drop (in H2O)	10.52	10.69	10.40	0.09	15
Spray Zone Pressure Drop (in H2O)	4.11	4.13	4.07	0.02	15
VME Pressure Drop (in H2O)	0.36	0.37	0.35	0.01	15
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	15
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	349	520	180	109	15

PHV-212 Process Summary Report
(11/01/95 03:00:00 to 11/01/95 10:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	88.0	88.3	87.9	0.2	7
SO2 Removal (NTU)	2.12	2.15	2.11	0.01	7
L/G Ratio (gal/macf)	72	72	72	0	7
Reaction Tank pH	5.56	5.60	5.52	0.03	7
Absorber pH	4.81	4.97	4.53	0.18	7
Flue Gas Flow Rate (scfm)	19900	19904	19895	3	7
Header 1 Flow (gpm)	650	650	650	0	7
Header 3 Flow (gpm)	650	650	650	0	7
Header 5 Flow (gpm)	400	400	400	0	7
Blowdown to Sump Rate (gpm)	0.69	0.69	0.69	0.00	7
Vacuum Belt Feed Rate	3.62	3.62	3.62	0.00	7
Centrifuge Feed Rate (gpm)	11.15	11.50	10.57	0.33	7
Reagent Feed to FLRT (gpm)	2.45	2.45	2.45	0.00	7
Facility Inlet SO2 Conc. (ppm)	1432	1507	1383	37	7
Inlet SO2 Concentration (ppm)	1999	2010	1990	6	7
Outlet SO2 Concentration (ppm)	223	227	218	3	7
Inlet O2 Concentration (%)	8.78	8.95	8.37	0.18	7
Outlet O2 Concentration (%)	8.34	8.51	7.96	0.17	7
Absorber Gas Velocity (ft/sec)	20.1	20.2	20.1	0.03	7
Inlet Gas Temperature (F)	338	342	336	2	7
Outlet Gas Temperature (F)	125	126	125	0	7
SO2 Absorbed (mmole/L)	6.52	6.55	6.50	0.02	7
Solids Residence Time (hrs)	6.3	6.4	6.3	0.0	7
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	7
Absorber Pressure Drop (in H2O)	14.79	14.87	14.72	0.05	7
Spray Zone Pressure Drop (in H2O)	3.26	3.27	3.26	0.01	7
VME Pressure Drop (in H2O)	1.14	1.17	1.12	0.02	7
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	7
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	379	407	335	24	7

PHV-215 Process Summary Report
(11/01/95 20:00:00 to 11/02/95 10:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	78.2	79.3	77.3	0.6	14
SO2 Removal (NTU)	1.52	1.57	1.48	0.03	14
L/G Ratio (gal/macf)	55	55	55	0	14
Reaction Tank pH	5.36	5.53	5.10	0.13	14
Absorber pH	4.40	4.53	4.31	0.05	14
Flue Gas Flow Rate (scfm)	19900	19905	19896	2	14
Header 1 Flow (gpm)	650	650	650	0	14
Header 3 Flow (gpm)	650	650	650	0	14
Header 5 Flow (gpm)	0	0	0	0	14
Blowdown to Sump Rate (gpm)	0.83	0.83	0.83	0.00	14
Vacuum Belt Feed Rate	2.46	2.48	2.44	0.01	14
Centrifuge Feed Rate (gpm)	10.62	11.00	10.00	0.28	14
Reagent Feed to FLRT (gpm)	2.11	2.15	2.05	0.03	14
Facility Inlet SO2 Conc. (ppm)	1135	1445	995	146	14
Inlet SO2 Concentration (ppm)	1999	2024	1974	10	14
Outlet SO2 Concentration (ppm)	406	424	381	12	14
Inlet O2 Concentration (%)	10.58	11.64	8.35	1.10	14
Outlet O2 Concentration (%)	9.96	11.01	7.92	1.04	14
Absorber Gas Velocity (ft/sec)	20.1	20.2	20.0	0.06	14
Inlet Gas Temperature (F)	335	341	330	3	14
Outlet Gas Temperature (F)	124	127	122	2	14
SO2 Absorbed (mmole/L)	7.57	7.66	7.47	0.05	14
Solids Residence Time (hrs)	7.1	7.2	7.1	0.0	14
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	14
Absorber Pressure Drop (in H2O)	12.98	13.38	12.72	0.18	14
Spray Zone Pressure Drop (in H2O)	3.88	5.59	1.18	0.90	14
VME Pressure Drop (in H2O)	1.13	1.17	1.11	0.02	14
Oxidation Air to Rxn Tank (acfm)	440	441	439	0	14
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	223	434	177	71	14

PHV-264 Process Summary Report
(11/02/95 12:00:00 to 11/02/95 15:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	76.3	78.0	72.8	2.5	3
SO2 Removal (NTU)	1.44	1.52	1.30	0.10	3
L/G Ratio (gal/macf)	81	82	81	0	3
Reaction Tank pH	4.95	4.95	4.95	0.00	3
Absorber pH	4.42	4.43	4.41	0.01	3
Flue Gas Flow Rate (scfm)	13401	13402	13400	1	3
Header 1 Flow (gpm)	650	650	649	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.83	0.83	0.81	0.01	3
Vacuum Belt Feed Rate	2.28	2.29	2.28	0.01	3
Centrifuge Feed Rate (gpm)	7.22	7.95	6.68	0.54	3
Reagent Feed to FLRT (gpm)	1.43	1.44	1.43	0.01	3
Facility Inlet SO2 Conc. (ppm)	1443	1471	1417	22	3
Inlet SO2 Concentration (ppm)	1999	2007	1990	7	3
Outlet SO2 Concentration (ppm)	445	513	411	48	3
Inlet O2 Concentration (%)	8.63	8.79	8.43	0.15	3
Outlet O2 Concentration (%)	8.25	8.36	8.04	0.15	3
Absorber Gas Velocity (ft/sec)	13.5	13.6	13.5	0.02	3
Inlet Gas Temperature (F)	316	318	314	2	3
Outlet Gas Temperature (F)	125	125	124	0	3
SO2 Absorbed (mmole/L)	4.98	5.09	4.77	0.15	3
Solids Residence Time (hrs)	10.9	11.4	10.6	0.3	3
Slurry Residence Time (min)	4.40	4.40	4.39	0.00	3
Absorber Pressure Drop (in H2O)	6.22	6.23	6.22	0.00	3
Spray Zone Pressure Drop (in H2O)	2.97	2.98	2.96	0.01	3
VME Pressure Drop (in H2O)	0.15	0.15	0.14	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	346	356	327	13	3

PHV-211R Process Summary Report
(11/02/95 17:00:00 to 11/02/95 20:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	50.9	51.5	50.4	0.4	3
SO2 Removal (NTU)	0.71	0.72	0.70	0.01	3
L/G Ratio (gal/macf)	55	55	55	0	3
Reaction Tank pH	4.99	5.02	4.96	0.03	3
Absorber pH	4.21	4.25	4.16	0.04	3
Flue Gas Flow Rate (scfm)	10001	10004	9998	2	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.81	0.81	0.81	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.50	4.50	4.50	0.00	3
Reagent Feed to FLRT (gpm)	0.67	0.70	0.65	0.02	3
Facility Inlet SO2 Conc. (ppm)	1498	1509	1480	13	3
Inlet SO2 Concentration (ppm)	2003	2007	2001	3	3
Outlet SO2 Concentration (ppm)	925	934	915	8	3
Inlet O2 Concentration (%)	8.07	8.33	7.93	0.18	3
Outlet O2 Concentration (%)	7.73	7.95	7.60	0.16	3
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.1	0.01	3
Inlet Gas Temperature (F)	308	309	307	1	3
Outlet Gas Temperature (F)	123	123	123	0	3
SO2 Absorbed (mmole/L)	4.96	5.03	4.91	0.05	3
Solids Residence Time (hrs)	21.8	22.0	21.5	0.2	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	2.74	2.74	2.73	0.01	3
Spray Zone Pressure Drop (in H2O)	0.96	0.96	0.96	0.00	3
VME Pressure Drop (in H2O)	0.09	0.09	0.09	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	499	518	488	14	3

PHV-210R Process Summary Report
(11/02/95 21:00:00 to 11/02/95 00:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	41.0	41.6	40.6	0.4	3
SO2 Removal (NTU)	0.53	0.54	0.52	0.01	3
L/G Ratio (gal/macf)	37	37	37	0	3
Reaction Tank pH	4.81	4.82	4.80	0.01	3
Absorber pH	3.92	3.99	3.86	0.05	3
Flue Gas Flow Rate (scfm)	14900	14901	14900	0	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.81	0.84	0.81	0.01	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.50	4.50	4.50	0.00	3
Reagent Feed to FLRT (gpm)	0.78	0.78	0.78	0.00	3
Facility Inlet SO2 Conc. (ppm)	1270	1357	1106	116	3
Inlet SO2 Concentration (ppm)	1996	2003	1991	5	3
Outlet SO2 Concentration (ppm)	1105	1115	1094	9	3
Inlet O2 Concentration (%)	9.76	11.09	9.09	0.94	3
Outlet O2 Concentration (%)	9.19	10.40	8.56	0.86	3
Absorber Gas Velocity (ft/sec)	15.0	15.0	15.0	0.02	3
Inlet Gas Temperature (F)	315	316	315	1	3
Outlet Gas Temperature (F)	123	124	122	1	3
SO2 Absorbed (mmole/L)	5.93	6.02	5.88	0.06	3
Solids Residence Time (hrs)	18.2	18.4	18.0	0.2	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	5.20	5.24	5.15	0.04	3
Spray Zone Pressure Drop (in H2O)	1.26	1.27	1.26	0.00	3
VME Pressure Drop (in H2O)	0.19	0.19	0.18	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	281	365	183	75	3

PHV-265 Process Summary Report
(11/03/95 01:00:00 to 11/03/95 04:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	80.1	81.1	79.5	0.7	3
SO2 Removal (NTU)	1.61	1.67	1.58	0.04	3
L/G Ratio (gal/macf)	96	96	96	0	3
Reaction Tank pH	4.79	4.84	4.72	0.05	3
Absorber pH	4.11	4.19	4.03	0.07	3
Flue Gas Flow Rate (scfm)	11500	11500	11500	0	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.81	1.00	0.81	0.09	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	5.09	5.81	4.50	0.54	3
Reagent Feed to FLRT (gpm)	1.24	1.25	1.22	0.01	3
Facility Inlet SO2 Conc. (ppm)	1066	1077	1057	8	3
Inlet SO2 Concentration (ppm)	2001	2002	1999	1	3
Outlet SO2 Concentration (ppm)	376	387	357	14	3
Inlet O2 Concentration (%)	11.36	11.39	11.30	0.04	3
Outlet O2 Concentration (%)	10.86	10.89	10.79	0.05	3
Absorber Gas Velocity (ft/sec)	11.5	11.6	11.5	0.01	3
Inlet Gas Temperature (F)	293	295	292	1	3
Outlet Gas Temperature (F)	119	120	119	0	3
SO2 Absorbed (mmole/L)	4.48	4.55	4.45	0.04	3
Solids Residence Time (hrs)	12.1	12.2	11.9	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	5.17	5.19	5.15	0.01	3
Spray Zone Pressure Drop (in H2O)	2.58	2.59	2.56	0.01	3
VME Pressure Drop (in H2O)	0.11	0.11	0.11	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	180	182	178	2	3

PHV-208RR Process Summary Report
(11/03/95 09:00:00 to 11/03/95 12:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	44.4	44.5	44.4	0.0	3
SO2 Removal (NTU)	0.59	0.59	0.59	0.00	3
L/G Ratio (gal/macf)	27	27	27	0	3
Reaction Tank pH	4.65	4.67	4.64	0.01	3
Absorber pH	3.97	3.98	3.95	0.01	3
Flue Gas Flow Rate (scfm)	19904	19905	19903	1	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.81	1.18	0.81	0.18	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.12	8.53	7.84	0.29	3
Reagent Feed to FLRT (gpm)	1.25	1.25	1.24	0.00	3
Facility Inlet SO2 Conc. (ppm)	1540	1628	1442	76	3
Inlet SO2 Concentration (ppm)	2001	2013	1993	8	3
Outlet SO2 Concentration (ppm)	1036	1043	1031	5	3
Inlet O2 Concentration (%)	7.75	8.59	6.96	0.66	3
Outlet O2 Concentration (%)	7.33	8.10	6.62	0.60	3
Absorber Gas Velocity (ft/sec)	20.1	20.2	20.1	0.03	3
Inlet Gas Temperature (F)	336	339	334	3	3
Outlet Gas Temperature (F)	124	125	123	1	3
SO2 Absorbed (mmole/L)	8.62	8.66	8.59	0.03	3
Solids Residence Time (hrs)	12.6	12.6	12.5	0.0	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	10.56	10.79	10.39	0.17	3
Spray Zone Pressure Drop (in H2O)	2.23	2.24	2.23	0.00	3
VME Pressure Drop (in H2O)	0.72	0.73	0.71	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	477	552	396	64	3

PHV-210RR Process Summary Report
(11/03/95 18:00:00 to 11/03/95 20:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	46.5	47.9	44.9	0.9	24
SO2 Removal (NTU)	0.62	0.65	0.60	0.02	24
L/G Ratio (gal/macf)	37	37	37	0	24
Reaction Tank pH	5.00	5.01	4.99	0.01	24
Absorber pH	4.01	4.14	3.91	0.07	24
Flue Gas Flow Rate (scfm)	14899	14905	14892	3	24
Header 1 Flow (gpm)	0	0	0	0	24
Header 3 Flow (gpm)	650	650	649	0	24
Header 5 Flow (gpm)	0	0	0	0	24
Blowdown to Sump Rate (gpm)	0.80	2.50	0.03	1.00	24
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.10	6.11	6.09	0.00	24
Reagent Feed to FLRT (gpm)	0.80	0.80	0.80	0.00	24
Facility Inlet SO2 Conc. (ppm)	1606	1640	1569	18	24
Inlet SO2 Concentration (ppm)	2000	2015	1989	8	24
Outlet SO2 Concentration (ppm)	1007	1031	979	16	24
Inlet O2 Concentration (%)	7.22	7.46	7.04	0.12	24
Outlet O2 Concentration (%)	6.99	7.56	6.48	0.36	24
Absorber Gas Velocity (ft/sec)	15.0	15.0	14.9	0.02	24
Inlet Gas Temperature (F)	305	308	299	3	24
Outlet Gas Temperature (F)	121	122	121	0	24
SO2 Absorbed (mmole/L)	6.74	7.01	6.50	0.14	24
Solids Residence Time (hrs)	16.1	16.6	15.4	0.3	24
Slurry Residence Time (min)	8.79	8.80	8.78	0.00	24
Absorber Pressure Drop (in H2O)	5.69	5.78	5.60	0.05	24
Spray Zone Pressure Drop (in H2O)	1.26	1.29	1.25	0.01	24
VME Pressure Drop (in H2O)	0.19	0.21	0.18	0.01	24
Oxidation Air to Rxn Tank (acfm)	439	450	429	6	24
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	565	570	560	3	24

PHV-206R Process Summary Report
(11/03/95 21:00:00 to 11/03/95 00:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	74.7	74.8	74.6	0.1	3
SO2 Removal (NTU)	1.37	1.38	1.37	0.00	3
L/G Ratio (gal/macf)	74	74	73	0	3
Reaction Tank pH	4.97	4.99	4.94	0.02	3
Absorber pH	3.92	3.98	3.86	0.05	3
Flue Gas Flow Rate (scfm)	14904	14907	14901	2	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.80	0.80	0.80	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.10	6.10	6.10	0.00	3
Reagent Feed to FLRT (gpm)	1.41	1.42	1.41	0.00	3
Facility Inlet SO2 Conc. (ppm)	1420	1599	1289	131	3
Inlet SO2 Concentration (ppm)	1989	1994	1985	4	3
Outlet SO2 Concentration (ppm)	473	474	472	1	3
Inlet O2 Concentration (%)	8.75	9.73	7.40	0.99	3
Outlet O2 Concentration (%)	8.42	9.32	7.18	0.90	3
Absorber Gas Velocity (ft/sec)	15.0	15.0	14.9	0.04	3
Inlet Gas Temperature (F)	306	310	302	3	3
Outlet Gas Temperature (F)	121	123	120	1	3
SO2 Absorbed (mmole/L)	5.39	5.41	5.37	0.02	3
Solids Residence Time (hrs)	10.0	10.1	10.0	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	8.07	8.10	8.04	0.03	3
Spray Zone Pressure Drop (in H2O)	3.31	3.32	3.30	0.01	3
VME Pressure Drop (in H2O)	0.19	0.19	0.18	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	384	540	269	114	3

PHV-265R Process Summary Report
(11/04/95 03:00:00 to 11/04/95 06:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	84.4	84.6	84.1	0.2	3
SO2 Removal (NTU)	1.86	1.87	1.84	0.01	3
L/G Ratio (gal/macf)	96	96	96	0	3
Reaction Tank pH	5.18	5.19	5.16	0.01	3
Absorber pH	3.99	4.02	3.96	0.02	3
Flue Gas Flow Rate (scfm)	11500	11501	11500	0	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.81	0.81	0.81	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.00	7.00	7.00	0.00	3
Reagent Feed to FLRT (gpm)	1.29	1.30	1.29	0.00	3
Facility Inlet SO2 Conc. (ppm)	1079	1149	1043	49	3
Inlet SO2 Concentration (ppm)	1997	2003	1988	6	3
Outlet SO2 Concentration (ppm)	295	299	290	4	3
Inlet O2 Concentration (%)	11.23	11.50	10.74	0.35	3
Outlet O2 Concentration (%)	10.86	11.13	10.36	0.35	3
Absorber Gas Velocity (ft/sec)	11.5	11.5	11.4	0.01	3
Inlet Gas Temperature (F)	283	283	282	0	3
Outlet Gas Temperature (F)	116	117	115	1	3
SO2 Absorbed (mmole/L)	4.72	4.74	4.68	0.03	3
Solids Residence Time (hrs)	11.5	11.6	11.4	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	5.50	5.50	5.50	0.00	3
Spray Zone Pressure Drop (in H2O)	2.59	2.60	2.58	0.01	3
VME Pressure Drop (in H2O)	0.11	0.11	0.11	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	188	206	178	13	3

PHV-204R Process Summary Report
(11/04/95 09:00:00 to 11/04/95 12:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	79.0	79.6	78.1	0.6	3
SO2 Removal (NTU)	1.56	1.59	1.52	0.03	3
L/G Ratio (gal/macf)	55	55	55	0	3
Reaction Tank pH	5.34	5.37	5.30	0.03	3
Absorber pH	4.53	4.55	4.49	0.03	3
Flue Gas Flow Rate (scfm)	19904	19906	19900	2	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.81	0.81	0.81	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	2.95	7.57	-0.01	3.31	3
Reagent Feed to FLRT (gpm)	2.10	2.10	2.10	0.00	3
Facility Inlet SO2 Conc. (ppm)	1200	1330	1120	92	3
Inlet SO2 Concentration (ppm)	1994	2003	1985	7	3
Outlet SO2 Concentration (ppm)	390	408	380	13	3
Inlet O2 Concentration (%)	10.10	10.57	9.36	0.53	3
Outlet O2 Concentration (%)	9.52	9.96	8.85	0.48	3
Absorber Gas Velocity (ft/sec)	20.0	20.1	19.9	0.09	3
Inlet Gas Temperature (F)	336	343	326	7	3
Outlet Gas Temperature (F)	123	124	122	1	3
SO2 Absorbed (mmole/L)	7.63	7.68	7.58	0.04	3
Solids Residence Time (hrs)	7.1	7.1	7.0	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	16.45	16.67	16.13	0.23	3
Spray Zone Pressure Drop (in H2O)	5.32	5.33	5.30	0.01	3
VME Pressure Drop (in H2O)	1.08	1.11	1.03	0.04	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	243	304	204	43	3

PHV-205RR Process Summary Report
(11/04/95 14:00:00 to 11/04/95 17:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	78.7	78.8	78.7	0.0	3
SO2 Removal (NTU)	1.55	1.55	1.55	0.00	3
L/G Ratio (gal/macf)	63	63	63	0	3
Reaction Tank pH	5.47	5.52	5.43	0.04	3
Absorber pH	4.52	4.53	4.51	0.01	3
Flue Gas Flow Rate (scfm)	17391	17398	17382	7	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.40	0.40	0.40	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.72	12.36	11.40	0.45	3
Reagent Feed to FLRT (gpm)	1.85	1.85	1.85	0.00	3
Facility Inlet SO2 Conc. (ppm)	1351	1495	1229	110	3
Inlet SO2 Concentration (ppm)	2007	2011	2002	4	3
Outlet SO2 Concentration (ppm)	400	400	399	1	3
Inlet O2 Concentration (%)	9.16	10.02	8.24	0.73	3
Outlet O2 Concentration (%)	8.72	9.51	7.91	0.65	3
Absorber Gas Velocity (ft/sec)	17.4	17.4	17.4	0.00	3
Inlet Gas Temperature (F)	316	317	316	1	3
Outlet Gas Temperature (F)	122	122	121	1	3
SO2 Absorbed (mmole/L)	6.69	6.70	6.67	0.01	3
Solids Residence Time (hrs)	8.1	8.1	8.1	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	11.22	11.36	11.12	0.10	3
Spray Zone Pressure Drop (in H2O)	4.22	4.24	4.20	0.01	3
VME Pressure Drop (in H2O)	0.33	0.33	0.32	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	302	422	220	87	3

PHV-221 Process Summary Report
(11/05/95 20:00:00 to 11/06/95 10:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	92.3	92.5	92.0	0.1	14
SO2 Removal (NTU)	2.57	2.59	2.53	0.01	14
L/G Ratio (gal/macf)	55	55	55	0	14
Reaction Tank pH	5.40	5.41	5.39	0.01	14
Absorber pH	5.04	5.11	4.96	0.04	14
Flue Gas Flow Rate (scfm)	10000	10006	9994	3	14
Header 1 Flow (gpm)	0	0	0	0	14
Header 3 Flow (gpm)	650	650	650	0	14
Header 5 Flow (gpm)	0	0	0	0	14
Blowdown to Sump Rate (gpm)	0.82	1.00	0.42	0.13	14
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.76	8.25	6.47	0.58	14
Reagent Feed to FLRT (gpm)	1.28	1.45	1.20	0.07	14
Facility Inlet SO2 Conc. (ppm)	1495	1663	1229	139	14
Inlet SO2 Concentration (ppm)	2000	2004	1995	2	14
Outlet SO2 Concentration (ppm)	145	150	142	2	14
Inlet O2 Concentration (%)	8.05	9.38	7.06	0.77	14
Outlet O2 Concentration (%)	7.96	9.21	7.01	0.77	14
Absorber Gas Velocity (ft/sec)	10.0	10.1	10.0	0.03	14
Inlet Gas Temperature (F)	285	293	279	4	14
Outlet Gas Temperature (F)	120	121	118	1	14
SO2 Absorbed (mmole/L)	8.99	9.01	8.96	0.01	14
Solids Residence Time (hrs)	12.0	12.1	12.0	0.0	14
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	14
Absorber Pressure Drop (in H2O)	3.20	3.27	3.16	0.04	14
Spray Zone Pressure Drop (in H2O)	0.96	0.96	0.95	0.00	14
VME Pressure Drop (in H2O)	0.10	0.11	0.10	0.00	14
Oxidation Air to Rxn Tank (acfm)	440	441	439	.1	14
DBA Addition Rate (mL/min)	93	93	92	0	14
NYSEG Load (MW)	547	688	354	126	14

PHV-220 Process Summary Report
(11/06/95 16:00:00 to 11/06/95 17:30:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	93.1	93.8	92.2	0.5	18
SO2 Removal (NTU)	2.67	2.78	2.55	0.07	18
L/G Ratio (gal/macf)	36	37	34	1	18
Reaction Tank pH	5.38	5.48	5.18	0.10	18
Absorber pH	5.04	5.10	4.97	0.04	18
Flue Gas Flow Rate (scfm)	14970	16202	14886	299	18
Header 1 Flow (gpm)	0	0	0	0	18
Header 3 Flow (gpm)	650	650	649	0	18
Header 5 Flow (gpm)	0	0	0	0	18
Blowdown to Sump Rate (gpm)	0.41	1.20	0.05	0.43	18
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.50	11.53	11.48	0.01	18
Reagent Feed to FLRT (gpm)	2.39	2.78	1.81	0.32	18
Facility Inlet SO2 Conc. (ppm)	1658	1702	1585	37	18
Inlet SO2 Concentration (ppm)	2001	2047	1973	17	18
Outlet SO2 Concentration (ppm)	131	148	115	9	18
Inlet O2 Concentration (%)	6.43	6.91	6.05	0.24	18
Outlet O2 Concentration (%)	6.20	6.93	5.54	0.37	18
Absorber Gas Velocity (ft/sec)	15.1	16.3	15.0	0.29	18
Inlet Gas Temperature (F)	314	315	312	1	18
Outlet Gas Temperature (F)	124	125	124	0	18
SO2 Absorbed (mmole/L)	13.57	14.58	13.30	0.26	18
Solids Residence Time (hrs)	8.0	8.1	7.4	0.1	18
Slurry Residence Time (min)	8.79	8.79	8.78	0.00	18
Absorber Pressure Drop (in H2O)	8.56	11.15	7.88	0.69	18
Spray Zone Pressure Drop (in H2O)	1.36	1.53	1.33	0.04	18
VME Pressure Drop (in H2O)	0.19	0.36	0.18	0.04	18
Oxidation Air to Rxn Tank (acfm)	440	451	433	3	18
DBA Addition Rate (mL/min)	92	92	92	0	18
NYSEG Load (MW)	650	692	575	43	18

PHV-218 Process Summary Report
(11/06/95 18:00:00 to 11/06/95 21:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	90.4	91.2	89.7	0.6	3
SO2 Removal (NTU)	2.34	2.43	2.28	0.06	3
L/G Ratio (gal/macf)	27	27	27	0	3
Reaction Tank pH	4.94	4.97	4.91	0.03	3
Absorber pH	4.73	4.80	4.70	0.05	3
Flue Gas Flow Rate (scfm)	19903	19911	19898	5	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.41	0.41	0.41	0.00	3
Vacuum Belt Feed Rate	1.52	3.88	0.00	1.69	3
Centrifuge Feed Rate (gpm)	11.87	12.62	11.50	0.53	3
Reagent Feed to FLRT (gpm)	2.79	3.10	2.45	0.27	3
Facility Inlet SO2 Conc. (ppm)	1700	1746	1674	33	3
Inlet SO2 Concentration (ppm)	1998	2005	1987	8	3
Outlet SO2 Concentration (ppm)	179	192	164	12	3
Inlet O2 Concentration (%)	6.38	6.86	6.12	0.34	3
Outlet O2 Concentration (%)	6.01	6.46	5.76	0.32	3
Absorber Gas Velocity (ft/sec)	20.1	20.2	20.1	0.03	3
Inlet Gas Temperature (F)	335	337	332	2	3
Outlet Gas Temperature (F)	127	127	127	0	3
SO2 Absorbed (mmole/L)	17.50	17.55	17.44	0.04	3
Solids Residence Time (hrs)	6.2	6.2	6.2	0.0	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	15.34	18.25	10.25	3.61	3
Spray Zone Pressure Drop (in H2O)	2.27	2.31	2.24	0.03	3
VME Pressure Drop (in H2O)	0.74	0.78	0.71	0.03	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
DBA Addition Rate (mL/min)	110	110	109	0	3
NYSEG Load (MW)	620	661	552	48	3

PHV-266 Process Summary Report
(11/09/95 04:00:00 to 11/09/95 12:00:00)
(minus 8-9 AM)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	94.3	94.6	93.9	0.2	7
SO2 Removal (NTU)	2.87	2.92	2.80	0.04	7
L/G Ratio (gal/macf)	55	56	55	0	7
Reaction Tank pH	5.40	5.52	5.25	0.09	7
Absorber pH	5.28	5.49	5.13	0.14	7
Flue Gas Flow Rate (scfm)	9987	10006	9966	13	7
Header 1 Flow (gpm)	0	0	0	0	7
Header 3 Flow (gpm)	654	657	650	3	7
Header 5 Flow (gpm)	0	0	0	0	7
Blowdown to Sump Rate (gpm)	0.52	0.85	0.26	0.22	7
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.74	7.19	6.00	0.47	7
Reagent Feed to FLRT (gpm)	1.25	1.31	1.18	0.06	7
Facility Inlet SO2 Conc. (ppm)	1575	1760	1378	133	7
Inlet SO2 Concentration (ppm)	2000	2011	1979	10	7
Outlet SO2 Concentration (ppm)	108	115	101	4	7
Inlet O2 Concentration (%)	8.54	9.58	7.64	0.74	7
Outlet O2 Concentration (%)	8.27	9.16	7.47	0.65	7
Absorber Gas Velocity (ft/sec)	10.0	10.1	10.0	0.04	7
Inlet Gas Temperature (F)	289	295	284	4	7
Outlet Gas Temperature (F)	119	120	117	1	7
SO2 Absorbed (mmole/L)	9.12	9.19	9.02	0.06	7
Solids Residence Time (hrs)	11.8	11.9	11.7	0.0	7
Slurry Residence Time (min)	8.73	8.79	8.69	0.05	7
Absorber Pressure Drop (in H2O)	2.61	2.64	2.59	0.02	7
Spray Zone Pressure Drop (in H2O)	0.86	0.88	0.85	0.01	7
VME Pressure Drop (in H2O)	0.12	0.12	0.11	0.00	7
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	7
DBA Addition Rate (mL/min)	64	66	61	2	7
NYSEG Load (MW)	597	677	494	66	7

PHV-267 Process Summary Report
(11/09/95 13:00:00 to 11/09/95 16:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	91.4	91.6	91.1	0.2	3
SO2 Removal (NTU)	2.45	2.48	2.42	0.03	3
L/G Ratio (gal/macf)	37	37	37	0	3
Reaction Tank pH	5.06	5.07	5.05	0.01	3
Absorber pH	4.97	4.98	4.95	0.01	3
Flue Gas Flow Rate (scfm)	14900	14902	14897	2	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.85	0.85	0.85	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.88	9.50	8.50	0.44	3
Reagent Feed to FLRT (gpm)	1.83	1.88	1.80	0.03	3
Facility Inlet SO2 Conc. (ppm)	1846	1874	1793	38	3
Inlet SO2 Concentration (ppm)	1999	2001	1996	2	3
Outlet SO2 Concentration (ppm)	162	167	157	4	3
Inlet O2 Concentration (%)	6.43	6.55	6.29	0.11	3
Outlet O2 Concentration (%)	6.25	6.37	6.10	0.11	3
Absorber Gas Velocity (ft/sec)	15.0	15.1	15.0	0.01	3
Inlet Gas Temperature (F)	312	314	311	1	3
Outlet Gas Temperature (F)	124	124	124	0	3
SO2 Absorbed (mmole/L)	13.25	13.30	13.19	0.05	3
Solids Residence Time (hrs)	8.2	8.2	8.1	0.0	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	5.10	5.10	5.08	0.01	3
Spray Zone Pressure Drop (in H2O)	1.30	1.30	1.30	0.00	3
VME Pressure Drop (in H2O)	0.25	0.25	0.25	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
DBA Addition Rate (mL/min)	143	144	142	1	3
NYSEG Load (MW)	697	698	696	1	3

PHV-268 Process Summary Report
(11/09/95 18:00:00 to 11/09/95 20:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	90.5	90.7	90.3	0.2	2
SO2 Removal (NTU)	2.35	2.38	2.33	0.02	2
L/G Ratio (gal/macf)	27	27	27	0	2
Reaction Tank pH	4.85	4.85	4.85	0.00	2
Absorber pH	4.61	4.62	4.60	0.01	2
Flue Gas Flow Rate (scfm)	19902	19902	19901	1	2
Header 1 Flow (gpm)	0	0	0	0	2
Header 3 Flow (gpm)	650	650	650	0	2
Header 5 Flow (gpm)	0	0	0	0	2
Blowdown to Sump Rate (gpm)	0.85	0.85	0.85	0.00	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	13.38	13.39	13.37	0.01	2
Reagent Feed to FLRT (gpm)	2.50	2.50	2.50	0.00	2
Facility Inlet SO2 Conc. (ppm)	1873	1874	1873	0	2
Inlet SO2 Concentration (ppm)	2001	2002	2000	1	2
Outlet SO2 Concentration (ppm)	177	181	173	4	2
Inlet O2 Concentration (%)	6.04	6.41	5.68	0.36	2
Outlet O2 Concentration (%)	5.78	6.12	5.45	0.33	2
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.01	2
Inlet Gas Temperature (F)	340	342	337	2	2
Outlet Gas Temperature (F)	127	127	127	0	2
SO2 Absorbed (mmole/L)	17.55	17.59	17.50	0.05	2
Solids Residence Time (hrs)	6.2	6.2	6.1	0.0	2
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	2
Absorber Pressure Drop (in H2O)	9.93	9.98	9.88	0.05	2
Spray Zone Pressure Drop (in H2O)	2.37	2.38	2.37	0.00	2
VME Pressure Drop (in H2O)	0.62	0.62	0.61	0.00	2
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	2
DBA Addition Rate (mL/min)	173	173	173	0	2
NYSEG Load (MW)	696	696	696	0	2

PHV-269 Process Summary Report
(11/09/95 21:00:00 to 11/09/95 00:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	91.1	91.2	91.0	0.1	3
SO2 Removal (NTU)	2.42	2.43	2.41	0.01	3
L/G Ratio (gal/macf)	31	31	31	0	3
Reaction Tank pH	4.94	4.96	4.92	0.02	3
Absorber pH	4.74	4.74	4.73	0.00	3
Flue Gas Flow Rate (scfm)	17400	17402	17399	1	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.85	0.85	0.85	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	12.70	12.70	12.70	0.00	3
Reagent Feed to FLRT (gpm)	2.20	2.20	2.20	0.00	3
Facility Inlet SO2 Conc. (ppm)	1715	1749	1685	27	3
Inlet SO2 Concentration (ppm)	1998	2001	1994	3	3
Outlet SO2 Concentration (ppm)	166	168	164	2	3
Inlet O2 Concentration (%)	6.07	6.25	5.92	0.14	3
Outlet O2 Concentration (%)	5.86	6.02	5.72	0.12	3
Absorber Gas Velocity (ft/sec)	17.6	17.6	17.6	0.01	3
Inlet Gas Temperature (F)	320	323	318	2	3
Outlet Gas Temperature (F)	125	125	125	0	3
SO2 Absorbed (mmole/L)	15.43	15.44	15.41	0.01	3
Solids Residence Time (hrs)	7.0	7.0	7.0	0.0	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	7.34	7.39	7.29	0.04	3
Spray Zone Pressure Drop (in H2O)	1.70	1.72	1.70	0.01	3
VME Pressure Drop (in H2O)	0.37	0.37	0.36	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	160	164	159	2	3
NYSEG Load (MW)	703	708	696	5	3

PHV-270 Process Summary Report
(11/10/95 01:00:00 to 11/10/95 04:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	98.1	98.6	97.7	0.3	3
SO2 Removal (NTU)	4.01	4.26	3.79	0.19	3
L/G Ratio (gal/macf)	55	55	55	0	3
Reaction Tank pH	4.77	4.80	4.75	0.02	3
Absorber pH	4.66	4.68	4.64	0.01	3
Flue Gas Flow Rate (scfm)	19902	19903	19901	1	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.85	0.85	0.85	0.00	3
Vacuum Belt Feed Rate	3.53	4.10	2.37	0.81	3
Centrifuge Feed Rate (gpm)	12.27	12.70	11.41	0.61	3
Reagent Feed to FLRT (gpm)	2.70	2.70	2.70	0.00	3
Facility Inlet SO2 Conc. (ppm)	1654	1675	1630	19	3
Inlet SO2 Concentration (ppm)	1999	2001	1996	2	3
Outlet SO2 Concentration (ppm)	35	42	26	6	3
Inlet O2 Concentration (%)	6.04	6.13	5.91	0.10	3
Outlet O2 Concentration (%)	5.78	5.87	5.66	0.09	3
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.02	3
Inlet Gas Temperature (F)	339	341	336	2	3
Outlet Gas Temperature (F)	127	127	126	0	3
SO2 Absorbed (mmole/L)	9.51	9.53	9.48	0.02	3
Solids Residence Time (hrs)	5.7	5.7	5.7	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	15.16	15.72	14.54	0.48	3
Spray Zone Pressure Drop (in H2O)	5.73	5.80	5.63	0.07	3
VME Pressure Drop (in H2O)	0.86	0.86	0.85	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	441	438	1	3
DBA Addition Rate (mL/min)	179	179	178	1	3
NYSEG Load (MW)	639	649	622	12	3

PHV-271 Process Summary Report
(11/10/95 05:00:00 to 11/10/95 08:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	99.8	99.9	99.8	0.0	3
SO2 Removal (NTU)	6.41	6.68	6.12	0.23	3
L/G Ratio (gal/macf)	71	71	71	0	3
Reaction Tank pH	4.92	4.94	4.91	0.01	3
Absorber pH	4.88	4.90	4.85	0.02	3
Flue Gas Flow Rate (scfm)	19900	19907	19892	6	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.85	0.85	0.85	0.00	3
Vacuum Belt Feed Rate	4.09	4.10	4.09	0.00	3
Centrifuge Feed Rate (gpm)	11.00	11.00	11.00	0.00	3
Reagent Feed to FLRT (gpm)	2.79	2.80	2.78	0.01	3
Facility Inlet SO2 Conc. (ppm)	1651	1697	1604	38	3
Inlet SO2 Concentration (ppm)	2004	2008	2000	3	3
Outlet SO2 Concentration (ppm)	3	4	2	1	3
Inlet O2 Concentration (%)	6.21	6.51	6.02	0.21	3
Outlet O2 Concentration (%)	5.94	6.23	5.75	0.21	3
Absorber Gas Velocity (ft/sec)	20.3	20.3	20.2	0.03	3
Inlet Gas Temperature (F)	349	354	347	3	3
Outlet Gas Temperature (F)	127	128	127	0	3
SO2 Absorbed (mmole/L)	7.41	7.42	7.40	0.01	3
Solids Residence Time (hrs)	5.6	5.6	5.6	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	19.41	20.33	18.04	0.99	3
Spray Zone Pressure Drop (in H2O)	6.20	6.22	6.19	0.01	3
VME Pressure Drop (in H2O)	0.85	0.86	0.83	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	183	184	183	0	3
NYSEG Load (MW)	670	682	652	13	3

PHV-268R Process Summary Report
(11/10/95 09:00:00 to 11/10/95 12:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	88.9	90.7	87.8	1.2	3
SO2 Removal (NTU)	2.21	2.37	2.11	0.12	3
L/G Ratio (gal/macf)	27	27	27	0	3
Reaction Tank pH	4.86	4.92	4.83	0.04	3
Absorber pH	4.64	4.70	4.58	0.05	3
Flue Gas Flow Rate (scfm)	19902	19903	19901	1	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.85	0.85	0.85	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	10.92	12.50	8.37	1.82	3
Reagent Feed to FLRT (gpm)	2.55	2.56	2.55	0.00	3
Facility Inlet SO2 Conc. (ppm)	1693	1700	1684	7	3
Inlet SO2 Concentration (ppm)	1970	2011	1905	46	3
Outlet SO2 Concentration (ppm)	204	226	166	27	3
Inlet O2 Concentration (%)	6.05	6.13	5.91	0.10	3
Outlet O2 Concentration (%)	5.63	5.70	5.54	0.06	3
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.03	3
Inlet Gas Temperature (F)	343	346	339	3	3
Outlet Gas Temperature (F)	127	128	127	0	3
SO2 Absorbed (mmole/L)	16.97	17.20	16.74	0.19	3
Solids Residence Time (hrs)	6.4	6.5	6.3	0.1	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	15.73	15.83	15.55	0.13	3
Spray Zone Pressure Drop (in H2O)	2.36	2.40	2.33	0.03	3
VME Pressure Drop (in H2O)	0.60	0.61	0.59	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	157	158	157	0	3
NYSEG Load (MW)	687	698	680	8	3

PHV-267R Process Summary Report
(11/10/95 16:00:00 to 11/10/95 17:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	90.3	90.6	90.0	0.2	12
SO2 Removal (NTU)	2.33	2.36	2.30	0.02	12
L/G Ratio (gal/macf)	37	37	36	0	12
Reaction Tank pH	4.26	4.28	4.22	0.02	12
Absorber pH	4.86	4.86	4.85	0.00	12
Flue Gas Flow Rate (scfm)	14900	14913	14883	7	12
Header 1 Flow (gpm)	0	0	0	0	12
Header 3 Flow (gpm)	650	650	650	0	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.84	2.60	0.05	0.98	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.99	12.02	11.94	0.02	12
Reagent Feed to FLRT (gpm)	2.15	2.16	2.14	0.00	12
Facility Inlet SO2 Conc. (ppm)	1675	1692	1632	18	12
Inlet SO2 Concentration (ppm)	1996	2030	1971	17	12
Outlet SO2 Concentration (ppm)	182	187	176	4	12
Inlet O2 Concentration (%)	6.22	6.68	6.04	0.17	12
Outlet O2 Concentration (%)	5.90	6.56	5.50	0.31	12
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.01	12
Inlet Gas Temperature (F)	315	315	315	0	12
Outlet Gas Temperature (F)	126	126	126	0	12
SO2 Absorbed (mmole/L)	13.08	13.32	12.90	0.11	12
Solids Residence Time (hrs)	8.3	8.4	8.1	0.1	12
Slurry Residence Time (min)	8.79	8.79	8.78	0.00	12
Absorber Pressure Drop (in H2O)	7.20	7.31	7.12	0.06	12
Spray Zone Pressure Drop (in H2O)	1.32	1.34	1.31	0.01	12
VME Pressure Drop (in H2O)	0.23	0.26	0.23	0.01	12
Oxidation Air to Rxn Tank (acfm)	440	452	434	7	12
DBA Addition Rate (mL/min)	139	139	139	0	12
NYSEG Load (MW)	669	687	624	20	12

PHV-245 Process Summary Report
(11/11/95 16:00:00 to 11/11/95 20:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	61.4	63.1	59.8	1.1	4
SO2 Removal (NTU)	0.95	1.00	0.91	0.03	4
L/G Ratio (gal/macf)	63	63	62	0	4
Reaction Tank pH	5.11	5.17	5.02	0.06	4
Absorber pH	3.96	4.00	3.92	0.03	4
Flue Gas Flow Rate (scfm)	17401	17403	17399	2	4
Header 1 Flow (gpm)	650	650	650	0	4
Header 3 Flow (gpm)	650	650	650	0	4
Header 5 Flow (gpm)	0	0	0	0	4
Blowdown to Sump Rate (gpm)	0.00	0.00	0.00	0.00	4
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	5.27	6.00	4.57	0.62	4
Reagent Feed to FLRT (gpm)	1.68	1.70	1.65	0.02	4
Facility Inlet SO2 Conc. (ppm)	1641	1664	1627	13	4
Inlet SO2 Concentration (ppm)	2000	2007	1995	5	4
Outlet SO2 Concentration (ppm)	722	753	689	23	4
Inlet O2 Concentration (%)	6.20	6.32	6.05	0.10	4
Outlet O2 Concentration (%)	5.80	5.91	5.65	0.10	4
Absorber Gas Velocity (ft/sec)	17.7	17.7	17.6	0.02	4
Inlet Gas Temperature (F)	327	330	323	3	4
Outlet Gas Temperature (F)	126	127	125	1	4
SO2 Absorbed (mmole/L)	5.20	5.33	5.09	0.09	4
Solids Residence Time (hrs)	10.4	10.6	10.1	0.2	4
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	4
Absorber Pressure Drop (in H2O)	15.60	15.92	15.23	0.28	4
Spray Zone Pressure Drop (in H2O)	4.34	4.41	4.28	0.06	4
VME Pressure Drop (in H2O)	0.37	0.37	0.37	0.00	4
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	4
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	700	709	688	9	4

PHV-244 Process Summary Report
(11/11/95 21:00:00 to 11/12/95 00:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	58.1	58.5	57.2	0.6	3
SO2 Removal (NTU)	0.87	0.88	0.85	0.01	3
L/G Ratio (gal/macf)	55	55	54	0	3
Reaction Tank pH	4.97	4.99	4.93	0.03	3
Absorber pH	3.91	3.93	3.89	0.02	3
Flue Gas Flow Rate (scfm)	19919	19946	19905	19	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.13	0.27	0.00	0.11	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	5.41	6.00	4.57	0.61	3
Reagent Feed to FLRT (gpm)	1.75	1.75	1.75	0.00	3
Facility Inlet SO2 Conc. (ppm)	1512	1696	1353	141	3
Inlet SO2 Concentration (ppm)	1994	2003	1978	11	3
Outlet SO2 Concentration (ppm)	778	797	764	14	3
Inlet O2 Concentration (%)	7.40	8.60	5.95	1.09	3
Outlet O2 Concentration (%)	6.87	8.03	5.52	1.03	3
Absorber Gas Velocity (ft/sec)	20.2	20.3	20.1	0.08	3
Inlet Gas Temperature (F)	341	345	338	3	3
Outlet Gas Temperature (F)	124	126	122	2	3
SO2 Absorbed (mmole/L)	5.62	5.67	5.56	0.04	3
Solids Residence Time (hrs)	9.6	9.7	9.5	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	11.81	20.10	7.65	5.86	3
Spray Zone Pressure Drop (in H2O)	5.76	5.79	5.73	0.02	3
VME Pressure Drop (in H2O)	0.80	0.82	0.79	0.02	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	522	664	378	117	3

PHV-246 Process Summary Report
(11/12/95 02:00:00 to 11/12/95 04:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	59.3	60.1	58.4	0.9	2
SO2 Removal (NTU)	0.90	0.92	0.88	0.02	2
L/G Ratio (gal/macf)	74	74	74	0	2
Reaction Tank pH	4.39	4.56	4.23	0.16	2
Absorber pH	3.74	3.75	3.72	0.01	2
Flue Gas Flow Rate (scfm)	14899	14900	14898	1	2
Header 1 Flow (gpm)	650	650	650	0	2
Header 3 Flow (gpm)	650	650	650	0	2
Header 5 Flow (gpm)	0	0	0	0	2
Blowdown to Sump Rate (gpm)	0.27	0.27	0.27	0.00	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.50	8.50	8.50	0.00	2
Reagent Feed to FLRT (gpm)	1.33	1.37	1.29	0.04	2
Facility Inlet SO2 Conc. (ppm)	1321	1326	1317	5	2
Inlet SO2 Concentration (ppm)	2004	2005	2004	0	2
Outlet SO2 Concentration (ppm)	766	782	750	16	2
Inlet O2 Concentration (%)	8.92	8.93	8.91	0.01	2
Outlet O2 Concentration (%)	8.45	8.48	8.41	0.03	2
Absorber Gas Velocity (ft/sec)	15.0	15.0	15.0	0.00	2
Inlet Gas Temperature (F)	310	310	309	0	2
Outlet Gas Temperature (F)	120	120	120	0	2
SO2 Absorbed (mmole/L)	4.31	4.37	4.25	0.06	2
Solids Residence Time (hrs)	12.6	12.7	12.4	0.2	2
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	2
Absorber Pressure Drop (in H2O)	10.91	11.05	10.76	0.15	2
Spray Zone Pressure Drop (in H2O)	3.37	3.39	3.35	0.02	2
VME Pressure Drop (in H2O)	0.25	0.25	0.25	0.00	2
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	2
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	337	344	329	7	2

PHV-247 Process Summary Report
11/12/95 07:00:00 to 11/12/95 08:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	83.5	84.6	82.8	0.5	12
SO2 Removal (NTU)	1.80	1.87	1.76	0.03	12
L/G Ratio (gal/macf)	110	111	109	0	12
Reaction Tank pH	5.32	5.40	5.27	0.04	12
Absorber pH	4.60	4.70	4.42	0.08	12
Flue Gas Flow Rate (scfm)	10002	10054	9982	18	12
Header 1 Flow (gpm)	650	650	650	0	12
Header 3 Flow (gpm)	650	650	649	0	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.29	0.75	0.06	0.29	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	3.79	4.19	3.69	0.16	12
Reagent Feed to FLRT (gpm)	1.25	1.26	1.24	0.00	12
Facility Inlet SO2 Conc. (ppm)	1406	1465	1310	49	12
Inlet SO2 Concentration (ppm)	2002	2048	1968	22	12
Outlet SO2 Concentration (ppm)	312	328	287	10	12
Inlet O2 Concentration (%)	9.04	9.40	8.53	0.31	12
Outlet O2 Concentration (%)	8.66	9.56	7.97	0.40	12
Absorber Gas Velocity (ft/sec)	10.0	10.1	10.0	0.02	12
Inlet Gas Temperature (F)	287	288	285	1	12
Outlet Gas Temperature (F)	118	119	118	0	12
SO2 Absorbed (mmole/L)	4.07	4.17	3.98	0.05	12
Solids Residence Time (hrs)	13.3	13.6	13.0	0.2	12
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	12
Absorber Pressure Drop (in H2O)	5.22	5.27	5.14	0.04	12
Spray Zone Pressure Drop (in H2O)	2.10	2.15	2.05	0.02	12
VME Pressure Drop (in H2O)	0.12	0.19	0.11	0.02	12
Oxidation Air to Rxn Tank (acfm)	440	450	433	5	12
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	446	496	402	34	12

PHV-245R Process Summary Report
11/12/95 09:00:00 to 11/12/95 12:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	71.0	71.0	71.0	0.0	3
SO2 Removal (NTU)	1.24	1.24	1.24	0.00	3
L/G Ratio (gal/macf)	63	63	63	0	3
Reaction Tank pH	5.25	5.34	5.14	0.08	3
Absorber pH	4.19	4.21	4.18	0.01	3
Flue Gas Flow Rate (scfm)	17399	17402	17395	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.27	0.27	0.27	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.36	9.61	6.94	1.10	3
Reagent Feed to FLRT (gpm)	1.90	1.90	1.90	0.00	3
Facility Inlet SO2 Conc. (ppm)	1706	1733	1667	29	3
Inlet SO2 Concentration (ppm)	2002	2005	2000	2	3
Outlet SO2 Concentration (ppm)	543	544	542	1	3
Inlet O2 Concentration (%)	6.25	6.68	5.76	0.38	3
Outlet O2 Concentration (%)	5.89	6.30	5.43	0.36	3
Absorber Gas Velocity (ft/sec)	17.6	17.7	17.5	0.05	3
Inlet Gas Temperature (F)	324	331	318	5	3
Outlet Gas Temperature (F)	124	125	123	1	3
SO2 Absorbed (mmole/L)	6.02	6.03	6.02	0.00	3
Solids Residence Time (hrs)	9.0	9.0	9.0	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	16.36	16.58	16.13	0.18	3
Spray Zone Pressure Drop (in H2O)	4.39	4.42	4.34	0.03	3
VME Pressure Drop (in H2O)	0.38	0.38	0.38	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	684	689	674	7	3

PHV-249 Process Summary Report
11/12/95 13:00:00 to 11/12/95 16:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	41.0	41.2	40.7	0.2	3
SO2 Removal (NTU)	0.53	0.53	0.52	0.00	3
L/G Ratio (gal/macf)	31	31	31	0	3
Reaction Tank pH	5.64	5.66	5.61	0.02	3
Absorber pH	4.15	4.16	4.14	0.01	3
Flue Gas Flow Rate (scfm)	17399	17402	17397	2	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	1.26	1.34	1.23	0.05	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.42	9.64	4.00	2.37	3
Reagent Feed to FLRT (gpm)	1.13	1.14	1.12	0.01	3
Facility Inlet SO2 Conc. (ppm)	1716	1736	1698	16	3
Inlet SO2 Concentration (ppm)	2000	2002	1998	1	3
Outlet SO2 Concentration (ppm)	1105	1109	1102	3	3
Inlet O2 Concentration (%)	6.43	6.51	6.33	0.07	3
Outlet O2 Concentration (%)	6.04	6.12	5.94	0.07	3
Absorber Gas Velocity (ft/sec)	17.6	17.6	17.5	0.00	3
Inlet Gas Temperature (F)	321	322	321	0	3
Outlet Gas Temperature (F)	123	123	123	0	3
SO2 Absorbed (mmole/L)	6.94	6.98	6.90	0.03	3
Solids Residence Time (hrs)	15.6	15.7	15.5	0.1	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	12.74	13.04	12.43	0.25	3
Spray Zone Pressure Drop (in H2O)	1.76	1.77	1.74	0.01	3
VME Pressure Drop (in H2O)	0.36	0.36	0.36	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	687	691	681	4	3

PHV-248 Process Summary Report
11/12/95 17:00:00 to 11/12/95 20:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	42.1	42.9	41.4	0.6	3
SO2 Removal (NTU)	0.55	0.56	0.53	0.01	3
L/G Ratio (gal/macf)	27	27	27	0	3
Reaction Tank pH	5.80	5.83	5.77	0.02	3
Absorber pH	4.27	4.30	4.25	0.02	3
Flue Gas Flow Rate (scfm)	19900	19902	19895	3	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	1.23	1.23	1.23	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.82	6.45	4.00	1.15	3
Reagent Feed to FLRT (gpm)	1.33	1.37	1.30	0.03	3
Facility Inlet SO2 Conc. (ppm)	1637	1668	1619	22	3
Inlet SO2 Concentration (ppm)	1998	2005	1989	7	3
Outlet SO2 Concentration (ppm)	1078	1096	1064	13	3
Inlet O2 Concentration (%)	6.37	6.39	6.34	0.02	3
Outlet O2 Concentration (%)	5.92	5.94	5.89	0.02	3
Absorber Gas Velocity (ft/sec)	20.1	20.2	20.1	0.03	3
Inlet Gas Temperature (F)	339	341	338	1	3
Outlet Gas Temperature (F)	126	126	126	0	3
SO2 Absorbed (mmole/L)	8.15	8.31	8.04	0.12	3
Solids Residence Time (hrs)	13.3	13.5	13.0	0.2	3
Slurry Residence Time (min)	8.79	8.79	8.78	0.00	3
Absorber Pressure Drop (in H2O)	18.82	19.03	18.63	0.16	3
Spray Zone Pressure Drop (in H2O)	2.38	2.44	2.34	0.04	3
VME Pressure Drop (in H2O)	0.57	0.57	0.56	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	699	700	698	1	3

PHV-250 Process Summary Report
11/12/95 21:00:00 to 11/13/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	45.9	46.6	45.4	0.5	3
SO2 Removal (NTU)	0.61	0.63	0.61	0.01	3
L/G Ratio (gal/macf)	37	37	37	0	3
Reaction Tank pH	5.96	6.00	5.93	0.03	3
Absorber pH	4.46	4.52	4.40	0.05	3
Flue Gas Flow Rate (scfm)	14902	14905	14898	3	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	1.23	1.23	1.23	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.16	4.47	4.01	0.22	3
Reagent Feed to FLRT (gpm)	1.11	1.23	1.04	0.09	3
Facility Inlet SO2 Conc. (ppm)	1355	1473	1257	90	3
Inlet SO2 Concentration (ppm)	1996	2001	1989	5	3
Outlet SO2 Concentration (ppm)	1013	1020	1001	8	3
Inlet O2 Concentration (%)	8.42	8.99	7.65	0.57	3
Outlet O2 Concentration (%)	7.90	8.43	7.17	0.54	3
Absorber Gas Velocity (ft/sec)	15.0	15.0	15.0	0.01	3
Inlet Gas Temperature (F)	313	315	312	1	3
Outlet Gas Temperature (F)	122	122	121	0	3
SO2 Absorbed (mmole/L)	6.64	6.77	6.55	0.09	3
Solids Residence Time (hrs)	16.3	16.5	16.0	0.2	3
Slurry Residence Time (min)	8.79	8.79	8.78	0.00	3
Absorber Pressure Drop (in H2O)	10.67	11.03	10.32	0.29	3
Spray Zone Pressure Drop (in H2O)	1.32	1.32	1.30	0.01	3
VME Pressure Drop (in H2O)	0.24	0.24	0.24	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	473	559	390	69	3

PHV-251 Process Summary Report
11/13/95 01:00:00 to 11/13/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	56.0	56.3	55.7	0.3	3
SO2 Removal (NTU)	0.82	0.83	0.81	0.01	3
L/G Ratio (gal/macf)	55	55	55	0	3
Reaction Tank pH	6.11	6.12	6.09	0.01	3
Absorber pH	5.02	5.11	4.93	0.07	3
Flue Gas Flow Rate (scfm)	10000	10004	9997	3	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	1.23	1.23	1.23	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.01	4.01	4.01	0.00	3
Reagent Feed to FLRT (gpm)	0.90	0.92	0.89	0.01	3
Facility Inlet SO2 Conc. (ppm)	1265	1285	1247	15	3
Inlet SO2 Concentration (ppm)	2001	2004	1998	2	3
Outlet SO2 Concentration (ppm)	830	836	825	5	3
Inlet O2 Concentration (%)	9.20	9.28	9.09	0.08	3
Outlet O2 Concentration (%)	8.71	8.77	8.63	0.06	3
Absorber Gas Velocity (ft/sec)	10.0	10.0	10.0	0.01	3
Inlet Gas Temperature (F)	289	292	288	2	3
Outlet Gas Temperature (F)	118	118	118	0	3
SO2 Absorbed (mmole/L)	5.46	5.48	5.42	0.03	3
Solids Residence Time (hrs)	19.8	20.0	19.7	0.1	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	4.67	4.82	4.55	0.11	3
Spray Zone Pressure Drop (in H2O)	0.89	0.90	0.88	0.01	3
VME Pressure Drop (in H2O)	0.10	0.10	0.10	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	456	497	424	30	3

PHV-248R Process Summary Report
11/13/95 05:00:00 to 11/13/95 08:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	48.7	52.5	46.5	2.7	3
SO2 Removal (NTU)	0.67	0.74	0.63	0.05	3
L/G Ratio (gal/macf)	28	28	28	0	3
Reaction Tank pH	5.92	5.98	5.85	0.05	3
Absorber pH	4.58	4.74	4.48	0.11	3
Flue Gas Flow Rate (scfm)	19903	19910	19897	5	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	1.23	1.23	1.23	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.87	10.00	8.00	0.84	3
Reagent Feed to FLRT (gpm)	1.50	1.52	1.46	0.03	3
Facility Inlet SO2 Conc. (ppm)	1451	1546	1315	98	3
Inlet SO2 Concentration (ppm)	2015	2026	2003	10	3
Outlet SO2 Concentration (ppm)	964	1005	898	47	3
Inlet O2 Concentration (%)	7.35	8.28	6.57	0.71	3
Outlet O2 Concentration (%)	6.90	7.68	6.28	0.58	3
Absorber Gas Velocity (ft/sec)	20.0	20.1	20.0	0.02	3
Inlet Gas Temperature (F)	338	340	336	2	3
Outlet Gas Temperature (F)	125	126	124	0	3
SO2 Absorbed (mmole/L)	9.50	10.30	9.09	0.56	3
Solids Residence Time (hrs)	11.4	11.9	10.5	0.6	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	8.27	9.48	7.65	0.86	3
Spray Zone Pressure Drop (in H2O)	2.37	2.37	2.36	0.00	3
VME Pressure Drop (in H2O)	0.59	0.60	0.58	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	567	654	456	82	3

PHV-240 Process Summary Report
11/13/95 09:00:00 to 11/13/95 12:00:00 and

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	83.4	84.3	82.4	1.0	2
SO2 Removal (NTU)	1.80	1.85	1.74	0.06	2
L/G Ratio (gal/macf)	72	72	72	0	2
Reaction Tank pH	5.49	5.52	5.46	0.03	2
Absorber pH	4.82	4.86	4.78	0.04	2
Flue Gas Flow Rate (scfm)	19899	19901	19896	3	2
Header 1 Flow (gpm)	650	650	650	0	2
Header 3 Flow (gpm)	650	650	650	0	2
Header 5 Flow (gpm)	400	400	400	0	2
Blowdown to Sump Rate (gpm)	1.55	1.88	1.23	0.33	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.75	12.00	11.50	0.25	2
Reagent Feed to FLRT (gpm)	2.35	2.40	2.30	0.05	2
Facility Inlet SO2 Conc. (ppm)	1540	1562	1517	22	2
Inlet SO2 Concentration (ppm)	1999	2001	1997	2	2
Outlet SO2 Concentration (ppm)	310	328	291	18	2
Inlet O2 Concentration (%)	6.43	6.54	6.31	0.11	2
Outlet O2 Concentration (%)	6.17	6.27	6.08	0.09	2
Absorber Gas Velocity (ft/sec)	20.1	20.1	20.0	0.02	2
Inlet Gas Temperature (F)	344	345	342	2	2
Outlet Gas Temperature (F)	127	127	127	0	2
SO2 Absorbed (mmole/L)	6.17	6.24	6.11	0.07	2
Solids Residence Time (hrs)	6.7	6.8	6.6	0.1	2
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	2
Absorber Pressure Drop (in H2O)	15.20	15.23	15.16	0.03	2
Spray Zone Pressure Drop (in H2O)	6.19	6.19	6.19	0.00	2
VME Pressure Drop (in H2O)	0.86	0.87	0.85	0.01	2
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	2
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	679	681	678	1	2

PHV-241 Process Summary Report
11/13/95 13:00:00 to 11/13/95 16:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	84.0	84.4	83.6	0.4	3
SO2 Removal (NTU)	1.83	1.86	1.81	0.02	3
L/G Ratio (gal/macf)	83	83	83	0	3
Reaction Tank pH	5.58	5.63	5.50	0.06	3
Absorber pH	4.72	4.78	4.68	0.04	3
Flue Gas Flow Rate (scfm)	17401	17403	17400	1	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	2.00	2.00	2.00	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	10.80	12.00	8.39	1.70	3
Reagent Feed to FLRT (gpm)	2.19	2.20	2.18	0.01	3
Facility Inlet SO2 Conc. (ppm)	1485	1526	1459	29	3
Inlet SO2 Concentration (ppm)	2000	2001	1999	1	3
Outlet SO2 Concentration (ppm)	300	307	291	7	3
Inlet O2 Concentration (%)	6.82	7.05	6.52	0.22	3
Outlet O2 Concentration (%)	6.60	6.81	6.33	0.20	3
Absorber Gas Velocity (ft/sec)	17.4	17.4	17.4	0.03	3
Inlet Gas Temperature (F)	323	325	319	3	3
Outlet Gas Temperature (F)	125	125	124	0	3
SO2 Absorbed (mmole/L)	5.44	5.47	5.41	0.02	3
Solids Residence Time (hrs)	7.6	7.6	7.6	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	11.08	11.21	10.96	0.10	3
Spray Zone Pressure Drop (in H2O)	5.25	5.32	5.18	0.06	3
VME Pressure Drop (in H2O)	0.38	0.38	0.37	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	623	668	591	33	3

PHV-242 Process Summary Report
11/13/95 17:00:00 to 11/13/95 20:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	86.1	86.5	85.4	0.5	3
SO2 Removal (NTU)	1.98	2.00	1.93	0.03	3
L/G Ratio (gal/macf)	97	97	97	0	3
Reaction Tank pH	5.74	5.75	5.72	0.01	3
Absorber pH	4.98	5.10	4.86	0.10	3
Flue Gas Flow Rate (scfm)	14901	14904	14897	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.96	1.23	0.82	0.19	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.32	8.29	6.33	0.80	3
Reagent Feed to FLRT (gpm)	1.80	1.85	1.76	0.04	3
Facility Inlet SO2 Conc. (ppm)	1558	1577	1548	13	3
Inlet SO2 Concentration (ppm)	1999	2003	1997	3	3
Outlet SO2 Concentration (ppm)	260	273	253	9	3
Inlet O2 Concentration (%)	6.71	6.84	6.58	0.11	3
Outlet O2 Concentration (%)	6.51	6.63	6.38	0.10	3
Absorber Gas Velocity (ft/sec)	14.9	14.9	14.9	0.01	3
Inlet Gas Temperature (F)	315	316	315	1	3
Outlet Gas Temperature (F)	125	126	125	0	3
SO2 Absorbed (mmole/L)	4.78	4.80	4.73	0.03	3
Solids Residence Time (hrs)	8.7	8.7	8.6	0.1	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	8.51	8.55	8.47	0.03	3
Spray Zone Pressure Drop (in H2O)	4.14	4.16	4.13	0.01	3
VME Pressure Drop (in H2O)	0.25	0.25	0.25	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	678	703	643	25	3

PHV-243 Process Summary Report
11/13/95 22:00:00 to 11/14/95 00:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	91.8	91.9	91.8	0.0	2
SO2 Removal (NTU)	2.51	2.51	2.50	0.00	2
L/G Ratio (gal/macf)	143	143	143	0	2
Reaction Tank pH	5.89	5.90	5.87	0.01	2
Absorber pH	5.22	5.23	5.21	0.01	2
Flue Gas Flow Rate (scfm)	10004	10004	10003	0	2
Header 1 Flow (gpm)	650	650	650	0	2
Header 3 Flow (gpm)	650	650	650	0	2
Header 5 Flow (gpm)	400	400	400	0	2
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	5.85	5.85	5.85	0.00	2
Reagent Feed to FLRT (gpm)	1.24	1.24	1.24	0.00	2
Facility Inlet SO2 Conc. (ppm)	1456	1531	1380	76	2
Inlet SO2 Concentration (ppm)	1996	1997	1996	0	2
Outlet SO2 Concentration (ppm)	154	154	154	0	2
Inlet O2 Concentration (%)	8.32	8.96	7.68	0.64	2
Outlet O2 Concentration (%)	8.17	8.76	7.59	0.58	2
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.1	0.01	2
Inlet Gas Temperature (F)	293	293	292	0	2
Outlet Gas Temperature (F)	121	122	120	1	2
SO2 Absorbed (mmole/L)	3.41	3.42	3.41	0.00	2
Solids Residence Time (hrs)	12.1	12.1	12.1	0.0	2
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	2
Absorber Pressure Drop (in H2O)	4.72	4.72	4.72	0.00	2
Spray Zone Pressure Drop (in H2O)	2.52	2.52	2.52	0.00	2
VME Pressure Drop (in H2O)	0.11	0.11	0.11	0.00	2
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	2
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	519	590	449	70	2

PHV-240R Process Summary Report
11/14/95 01:00:00 to 11/14/95 04:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	85.2	85.3	85.1	0.1	3
SO2 Removal (NTU)	1.91	1.92	1.90	0.01	3
L/G Ratio (gal/macf)	72	72	72	0	3
Reaction Tank pH	5.67	5.68	5.66	0.01	3
Absorber pH	4.83	4.86	4.80	0.02	3
Flue Gas Flow Rate (scfm)	19899	19901	19898	1	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.73	12.00	11.20	0.38	3
Reagent Feed to FLRT (gpm)	2.30	2.30	2.29	0.00	3
Facility Inlet SO2 Conc. (ppm)	1300	1351	1231	50	3
Inlet SO2 Concentration (ppm)	1997	2001	1992	4	3
Outlet SO2 Concentration (ppm)	276	278	274	2	3
Inlet O2 Concentration (%)	9.11	9.59	8.79	0.34	3
Outlet O2 Concentration (%)	8.70	9.08	8.43	0.27	3
Absorber Gas Velocity (ft/sec)	20.1	20.1	20.1	0.01	3
Inlet Gas Temperature (F)	336	339	334	2	3
Outlet Gas Temperature (F)	124	124	124	0	3
SO2 Absorbed (mmole/L)	6.30	6.32	6.28	0.02	3
Solids Residence Time (hrs)	6.6	6.6	6.5	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	15.23	15.27	15.16	0.05	3
Spray Zone Pressure Drop (in H2O)	6.19	6.21	6.17	0.02	3
VME Pressure Drop (in H2O)	0.86	0.87	0.85	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	352	384	311	30	3

PHV-244R Process Summary Report
11/14/95 05:00:00 to 11/14/95 08:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	78.5	79.0	77.7	0.5	3
SO2 Removal (NTU)	1.54	1.56	1.50	0.02	3
L/G Ratio (gal/macf)	55	55	55	0	3
Reaction Tank pH	5.72	5.73	5.71	0.01	3
Absorber pH	4.73	4.79	4.68	0.04	3
Flue Gas Flow Rate (scfm)	19899	19900	19897	2	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.09	8.26	8.00	0.12	3
Reagent Feed to FLRT (gpm)	2.23	2.23	2.23	0.00	3
Facility Inlet SO2 Conc. (ppm)	1488	1591	1389	83	3
Inlet SO2 Concentration (ppm)	2005	2013	2001	6	3
Outlet SO2 Concentration (ppm)	402	414	394	9	3
Inlet O2 Concentration (%)	7.91	8.79	7.03	0.72	3
Outlet O2 Concentration (%)	7.56	8.37	6.72	0.68	3
Absorber Gas Velocity (ft/sec)	20.1	20.2	20.1	0.02	3
Inlet Gas Temperature (F)	341	345	339	3	3
Outlet Gas Temperature (F)	126	126	125	0	3
SO2 Absorbed (mmole/L)	7.62	7.71	7.54	0.07	3
Solids Residence Time (hrs)	7.1	7.2	7.0	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	14.14	14.16	14.12	0.02	3
Spray Zone Pressure Drop (in H2O)	5.77	5.78	5.76	0.01	3
VME Pressure Drop (in H2O)	0.89	0.91	0.87	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	484	610	366	100	3

PHV-246R Process Summary Report
11/14/95 10:00:00 to 11/14/95 12:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	82.7	82.9	82.6	0.2	2
SO2 Removal (NTU)	1.76	1.76	1.75	0.01	2
L/G Ratio (gal/macf)	73	73	73	0	2
Reaction Tank pH	5.98	6.00	5.95	0.02	2
Absorber pH	4.98	4.99	4.98	0.00	2
Flue Gas Flow Rate (scfm)	14901	14902	14899	1	2
Header 1 Flow (gpm)	650	650	650	0	2
Header 3 Flow (gpm)	650	650	650	0	2
Header 5 Flow (gpm)	0	0	0	0	2
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.11	7.22	7.00	0.11	2
Reagent Feed to FLRT (gpm)	1.80	1.84	1.75	0.04	2
Facility Inlet SO2 Conc. (ppm)	1663	1672	1654	9	2
Inlet SO2 Concentration (ppm)	2004	2008	2000	4	2
Outlet SO2 Concentration (ppm)	325	328	323	2	2
Inlet O2 Concentration (%)	6.97	7.01	6.92	0.05	2
Outlet O2 Concentration (%)	6.41	6.46	6.36	0.05	2
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.00	2
Inlet Gas Temperature (F)	316	316	315	1	2
Outlet Gas Temperature (F)	125	125	124	0	2
SO2 Absorbed (mmole/L)	6.01	6.04	5.99	0.02	2
Solids Residence Time (hrs)	9.0	9.0	9.0	0.0	2
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	2
Absorber Pressure Drop (in H2O)	7.90	7.90	7.89	0.00	2
Spray Zone Pressure Drop (in H2O)	3.39	3.40	3.39	0.00	2
VME Pressure Drop (in H2O)	0.25	0.25	0.25	0.00	2
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	2
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	635	637	632	3	2

PHV-247R Process Summary Report
11/14/95 14:00:00 to 11/14/95 16:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	89.1	89.5	88.8	0.4	2
SO2 Removal (NTU)	2.22	2.25	2.19	0.03	2
L/G Ratio (gal/macf)	110	110	110	0	2
Reaction Tank pH	5.97	5.99	5.95	0.02	2
Absorber pH	5.29	5.32	5.26	0.03	2
Flue Gas Flow Rate (scfm)	10000	10000	9999	0	2
Header 1 Flow (gpm)	650	650	650	0	2
Header 3 Flow (gpm)	650	651	650	0	2
Header 5 Flow (gpm)	0	0	0	0	2
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.00	9.00	9.00	0.00	2
Reagent Feed to FLRT (gpm)	1.18	1.20	1.15	0.02	2
Facility Inlet SO2 Conc. (ppm)	1647	1700	1593	53	2
Inlet SO2 Concentration (ppm)	2001	2002	2001	0	2
Outlet SO2 Concentration (ppm)	205	212	199	7	2
Inlet O2 Concentration (%)	8.04	8.40	7.69	0.36	2
Outlet O2 Concentration (%)	7.51	7.87	7.14	0.37	2
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.0	0.01	2
Inlet Gas Temperature (F)	291	293	290	2	2
Outlet Gas Temperature (F)	121	121	121	0	2
SO2 Absorbed (mmole/L)	4.34	4.36	4.32	0.02	2
Solids Residence Time (hrs)	12.5	12.5	12.4	0.1	2
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	2
Absorber Pressure Drop (in H2O)	4.35	4.37	4.34	0.02	2
Spray Zone Pressure Drop (in H2O)	2.19	2.20	2.17	0.02	2
VME Pressure Drop (in H2O)	0.11	0.11	0.11	0.00	2
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	2
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	615	654	575	39	2

PHV-249R Process Summary Report
11/14/95 17:00:00 to 11/14/95 19:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	49.0	49.0	48.9	0.1	2
SO2 Removal (NTU)	0.67	0.67	0.67	0.00	2
L/G Ratio (gal/macf)	31	31	31	0	2
Reaction Tank pH	6.02	6.04	6.00	0.02	2
Absorber pH	4.83	4.84	4.82	0.01	2
Flue Gas Flow Rate (scfm)	17397	17399	17396	2	2
Header 1 Flow (gpm)	0	0	0	0	2
Header 3 Flow (gpm)	650	650	650	0	2
Header 5 Flow (gpm)	0	0	0	0	2
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	2
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.03	7.06	5.00	1.03	2
Reagent Feed to FLRT (gpm)	1.20	1.20	1.20	0.00	2
Facility Inlet SO2 Conc. (ppm)	1723	1767	1678	45	2
Inlet SO2 Concentration (ppm)	1999	1999	1999	0	2
Outlet SO2 Concentration (ppm)	956	958	955	2	2
Inlet O2 Concentration (%)	6.64	6.94	6.34	0.30	2
Outlet O2 Concentration (%)	6.07	6.34	5.79	0.28	2
Absorber Gas Velocity (ft/sec)	17.6	17.6	17.6	0.02	2
Inlet Gas Temperature (F)	320	321	319	1	2
Outlet Gas Temperature (F)	124	125	124	0	2
SO2 Absorbed (mmole/L)	8.29	8.30	8.28	0.01	2
Solids Residence Time (hrs)	13.0	13.1	13.0	0.0	2
Slurry Residence Time (min)	8.79	8.79	8.78	0.00	2
Absorber Pressure Drop (in H2O)	7.39	7.43	7.35	0.04	2
Spray Zone Pressure Drop (in H2O)	1.76	1.76	1.76	0.00	2
VME Pressure Drop (in H2O)	0.37	0.37	0.36	0.00	2
Oxidation Air to Rxn Tank (acfm)	439	440	439	0	2
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	703	705	702	2	2

PHV-250R Process Summary Report
11/14/95 21:00:00 to 11/15/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	51.1	51.2	50.8	0.2	3
SO2 Removal (NTU)	0.71	0.72	0.71	0.00	3
L/G Ratio (gal/macf)	37	37	37	0	3
Reaction Tank pH	6.13	6.15	6.10	0.02	3
Absorber pH	4.96	4.99	4.94	0.02	3
Flue Gas Flow Rate (scfm)	14900	14902	14898	2	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.79	0.82	0.73	0.05	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.00	4.00	4.00	0.00	3
Reagent Feed to FLRT (gpm)	1.12	1.13	1.10	0.01	3
Facility Inlet SO2 Conc. (ppm)	1720	1726	1714	5	3
Inlet SO2 Concentration (ppm)	2000	2002	1998	2	3
Outlet SO2 Concentration (ppm)	919	923	915	3	3
Inlet O2 Concentration (%)	6.51	6.55	6.48	0.03	3
Outlet O2 Concentration (%)	5.96	6.00	5.94	0.03	3
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.00	3
Inlet Gas Temperature (F)	314	314	313	0	3
Outlet Gas Temperature (F)	124	124	123	0	3
SO2 Absorbed (mmole/L)	7.41	7.44	7.38	0.03	3
Solids Residence Time (hrs)	14.6	14.7	14.5	0.1	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	5.57	5.58	5.57	0.00	3
Spray Zone Pressure Drop (in H2O)	1.36	1.37	1.34	0.01	3
VME Pressure Drop (in H2O)	0.26	0.29	0.25	0.02	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	666	671	659	5	3

PHV-245RR Process Summary Report
11/15/95 01:00:00 to 11/15/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	76.6	78.4	74.4	1.7	3
SO2 Removal (NTU)	1.45	1.53	1.36	0.07	3
L/G Ratio (gal/macf)	63	63	63	0	3
Reaction Tank pH	5.78	5.83	5.75	0.03	3
Absorber pH	4.83	4.89	4.79	0.04	3
Flue Gas Flow Rate (scfm)	17398	17404	17395	4	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.82	0.82	0.82	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	10.27	11.00	9.00	0.90	3
Reagent Feed to FLRT (gpm)	1.80	1.80	1.80	0.00	3
Facility Inlet SO2 Conc. (ppm)	1628	1700	1582	52	3
Inlet SO2 Concentration (ppm)	2002	2010	1995	6	3
Outlet SO2 Concentration (ppm)	440	480	404	31	3
Inlet O2 Concentration (%)	7.03	7.32	6.51	0.37	3
Outlet O2 Concentration (%)	6.46	6.74	5.97	0.35	3
Absorber Gas Velocity (ft/sec)	17.6	17.6	17.5	0.03	3
Inlet Gas Temperature (F)	320	325	317	3	3
Outlet Gas Temperature (F)	124	125	123	0	3
SO2 Absorbed (mmole/L)	6.49	6.63	6.30	0.14	3
Solids Residence Time (hrs)	8.3	8.6	8.2	0.2	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	10.60	10.67	10.50	0.07	3
Spray Zone Pressure Drop (in H2O)	4.35	4.43	4.22	0.09	3
VME Pressure Drop (in H2O)	0.39	0.40	0.39	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	1	3
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	596	665	551	49	3

PHV-224 Process Summary Report
11/15/95 21:00:00 to 11/16/95 18:00:00)

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	84.1	84.6	83.1	0.4	21
SO2 Removal (NTU)	1.84	1.87	1.78	0.02	21
L/G Ratio (gal/macf)	97	97	96	0	21
Reaction Tank pH	5.87	5.91	5.80	0.03	21
Absorber pH	5.02	5.17	4.97	0.05	21
Flue Gas Flow Rate (scfm)	14899	14904	14892	3	21
Header 1 Flow (gpm)	650	650	650	0	21
Header 3 Flow (gpm)	650	650	650	0	21
Header 5 Flow (gpm)	400	400	400	0	21
Blowdown to Sump Rate (gpm)	0.30	0.42	0.07	0.17	21
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.35	11.00	8.00	0.95	21
Reagent Feed to FLRT (gpm)	1.80	1.80	1.80	0.00	21
Facility Inlet SO2 Conc. (ppm)	1499	1718	1287	112	21
Inlet SO2 Concentration (ppm)	2000	2009	1992	5	21
Outlet SO2 Concentration (ppm)	299	318	290	7	21
Inlet O2 Concentration (%)	7.51	9.43	6.44	0.96	21
Outlet O2 Concentration (%)	6.91	8.69	5.91	0.89	21
Absorber Gas Velocity (ft/sec)	15.0	15.0	14.9	0.03	21
Inlet Gas Temperature (F)	313	316	303	4	21
Outlet Gas Temperature (F)	123	125	121	1	21
SO2 Absorbed (mmole/L)	4.66	4.70	4.61	0.02	21
Solids Residence Time (hrs)	8.9	9.0	8.8	0.0	21
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	21
Absorber Pressure Drop (in H2O)	8.93	9.76	8.44	0.39	21
Spray Zone Pressure Drop (in H2O)	3.74	3.76	3.72	0.01	21
VME Pressure Drop (in H2O)	0.26	0.27	0.25	0.01	21
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	21
DBA Addition Rate (mL/min)	-	-	-	-	-
NYSEG Load (MW)	569	690	336	105	21

PHV-223 Process Summary Report
11/17/95 00:00:00 to 11/17/95 18:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	85.5	87.2	84.4	1.0	17
SO2 Removal (NTU)	1.94	2.06	1.86	0.07	17
L/G Ratio (gal/macf)	82	82	82	0	17
Reaction Tank pH	5.68	5.76	5.61	0.05	17
Absorber pH	4.98	5.13	4.87	0.10	17
Flue Gas Flow Rate (scfm)	17400	17403	17394	2	17
Header 1 Flow (gpm)	650	650	650	0	17
Header 3 Flow (gpm)	650	650	650	0	17
Header 5 Flow (gpm)	400	400	400	0	17
Blowdown to Sump Rate (gpm)	0.10	0.38	0.06	0.10	17
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	12.36	13.97	9.50	1.42	17
Reagent Feed to FLRT (gpm)	2.09	2.18	2.05	0.04	17
Facility Inlet SO2 Conc. (ppm)	1497	1661	1366	100	17
Inlet SO2 Concentration (ppm)	2000	2005	1987	4	17
Outlet SO2 Concentration (ppm)	271	294	238	18	17
Inlet O2 Concentration (%)	6.32	7.14	6.03	0.31	17
Outlet O2 Concentration (%)	5.78	6.57	5.48	0.30	17
Absorber Gas Velocity (ft/sec)	17.6	17.7	17.6	0.0	17
Inlet Gas Temperature (F)	327	333	321	4	17
Outlet Gas Temperature (F)	126	127	124	1	17
SO2 Absorbed (mmole/L)	5.54	5.64	5.47	0.06	17
Solids Residence Time (hrs)	7.5	7.6	7.3	0.1	17
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	17
Absorber Pressure Drop (in H2O)	18.06	19.17	17.00	0.60	17
Spray Zone Pressure Drop (in H2O)	4.93	5.00	4.86	0.04	17
VME Pressure Drop (in H2O)	0.43	0.44	0.41	0.01	17
Oxidation Air to Rxn Tank (acfm)	440	441	438	1	17
NYSEG Load (MW)	657	688	585	33	17

PHV-222 Process Summary Report
11/18/95 08:00:00 to 11/18/95 18:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	86.2	86.9	84.1	1.0	10
SO2 Removal (NTU)	1.98	2.03	1.84	0.07	10
L/G Ratio (gal/macf)	71	72	71	0	10
Reaction Tank pH	5.66	5.71	5.56	0.05	10
Absorber pH	4.73	4.78	4.63	0.05	10
Flue Gas Flow Rate (scfm)	19901	19906	19893	4	10
Header 1 Flow (gpm)	650	650	650	0	10
Header 3 Flow (gpm)	650	650	650	0	10
Header 5 Flow (gpm)	400	400	400	0	10
Blowdown to Sump Rate (gpm)	0.39	0.39	0.38	0.00	10
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	13.25	13.44	13.08	0.08	10
Reagent Feed to FLRT (gpm)	2.76	2.91	2.39	0.18	10
Facility Inlet SO2 Conc. (ppm)	1424	1440	1402	13	10
Inlet SO2 Concentration (ppm)	2000	2005	1997	2	10
Outlet SO2 Concentration (ppm)	257	295	243	18	10
Inlet O2 Concentration (%)	6.07	6.41	5.99	0.12	10
Outlet O2 Concentration (%)	5.52	5.85	5.43	0.11	10
Absorber Gas Velocity (ft/sec)	20.3	20.4	20.2	0.1	10
Inlet Gas Temperature (F)	349	363	342	7	10
Outlet Gas Temperature (F)	128	130	125	1	10
SO2 Absorbed (mmole/L)	6.39	6.44	6.23	0.07	10
Solids Residence Time (hrs)	6.5	6.6	6.4	0.1	10
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	10
Absorber Pressure Drop (in H2O)	12.06	20.97	10.96	2.97	10
Spray Zone Pressure Drop (in H2O)	6.19	6.20	6.18	0.01	10
VME Pressure Drop (in H2O)	0.94	0.97	0.92	0.01	10
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	10
NYSEG Load (MW)	680	703	641	15	10

PHV-225 Process Summary Report
11/18/95 20:00:00 to 11/19/95 18:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	74.3	75.7	73.1	0.6	21
SO2 Removal (NTU)	1.36	1.41	1.31	0.02	21
L/G Ratio (gal/macf)	55	55	54	0	21
Reaction Tank pH	5.67	5.72	5.60	0.04	21
Absorber pH	4.74	4.81	4.68	0.03	21
Flue Gas Flow Rate (scfm)	19903	19946	19894	10	21
Header 1 Flow (gpm)	650	650	650	0	21
Header 3 Flow (gpm)	650	650	650	0	21
Header 5 Flow (gpm)	0	0	0	0	21
Blowdown to Sump Rate (gpm)	0.39	0.48	0.32	0.03	21
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.72	12.50	10.33	0.59	21
Reagent Feed to FLRT (gpm)	2.40	2.45	2.35	0.02	21
Facility Inlet SO2 Conc. (ppm)	1457	1621	1219	134	21
Inlet SO2 Concentration (ppm)	2000	2008	1990	5	21
Outlet SO2 Concentration (ppm)	479	502	451	12	21
Inlet O2 Concentration (%)	6.98	9.08	5.98	1.03	21
Outlet O2 Concentration (%)	6.37	8.36	5.44	0.97	21
Absorber Gas Velocity (ft/sec)	20.2	20.3	20.1	0.0	21
Inlet Gas Temperature (F)	341	348	335	4	21
Outlet Gas Temperature (F)	127	128	125	1	21
SO2 Absorbed (mmole/L)	7.20	7.31	7.09	0.06	21
Solids Residence Time (hrs)	7.5	7.6	7.4	0.1	21
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	21
Absorber Pressure Drop (in H2O)	20.25	20.73	19.61	0.31	21
Spray Zone Pressure Drop (in H2O)	4.86	4.91	4.79	0.03	21
VME Pressure Drop (in H2O)	0.94	0.96	0.92	0.01	21
Oxidation Air to Rxn Tank (acfm)	440	442	439	0	21
NYSEG Load (MW)	581	677	343	104	21

PHV-224R Process Summary Report
11/19/95 20:00:00 to 11/20/95 12:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	84.0	84.3	83.5	0.2	14
SO2 Removal (NTU)	1.83	1.85	1.80	0.01	14
L/G Ratio (gal/macf)	96	96	96	0	14
Reaction Tank pH	5.78	5.82	5.75	0.02	14
Absorber pH	4.84	4.98	4.75	0.08	14
Flue Gas Flow Rate (scfm)	14900	14906	14895	3	14
Header 1 Flow (gpm)	650	650	650	0	14
Header 3 Flow (gpm)	650	650	650	0	14
Header 5 Flow (gpm)	400	400	400	0	14
Blowdown to Sump Rate (gpm)	0.48	0.48	0.48	0.00	14
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.98	12.00	7.91	1.15	14
Reagent Feed to FLRT (gpm)	2.06	2.06	2.06	0.00	14
Facility Inlet SO2 Conc. (ppm)	1554	1707	1283	137	14
Inlet SO2 Concentration (ppm)	2000	2014	1992	5	14
Outlet SO2 Concentration (ppm)	301	309	295	4	14
Inlet O2 Concentration (%)	7.38	9.44	6.22	1.03	14
Outlet O2 Concentration (%)	6.82	8.73	5.72	0.97	14
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.0	0.0	14
Inlet Gas Temperature (F)	315	316	311	1	14
Outlet Gas Temperature (F)	124	125	123	1	14
SO2 Absorbed (mmole/L)	4.66	4.69	4.64	0.02	14
Solids Residence Time (hrs)	8.9	8.9	8.8	0.0	14
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	14
Absorber Pressure Drop (in H2O)	12.02	12.58	11.58	0.30	14
Spray Zone Pressure Drop (in H2O)	3.77	3.81	3.73	0.02	14
VME Pressure Drop (in H2O)	0.30	0.31	0.30	0.00	14
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	14
NYSEG Load (MW)	570	693	314	126	14

PHV-272 Process Summary Report
11/20/95 13:00:00 to 11/20/95 16:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	72.5	73.5	72.0	0.7	3
SO2 Removal (NTU)	1.29	1.33	1.27	0.03	3
L/G Ratio (gal/macf)	73	73	73	0	3
Reaction Tank pH	5.83	5.86	5.80	0.03	3
Absorber pH	4.82	4.85	4.80	0.02	3
Flue Gas Flow Rate (scfm)	14900	14903	14896	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.54	0.54	0.54	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.00	8.00	8.00	0.00	3
Reagent Feed to FLRT (gpm)	1.78	1.81	1.74	0.03	3
Facility Inlet SO2 Conc. (ppm)	1623	1680	1569	45	3
Inlet SO2 Concentration (ppm)	2003	2004	2002	1	3
Outlet SO2 Concentration (ppm)	516	526	497	13	3
Inlet O2 Concentration (%)	6.93	7.41	6.48	0.38	3
Outlet O2 Concentration (%)	6.36	6.83	5.93	0.37	3
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.0	3
Inlet Gas Temperature (F)	316	316	314	1	3
Outlet Gas Temperature (F)	124	124	123	1	3
SO2 Absorbed (mmole/L)	5.27	5.34	5.23	0.05	3
Solids Residence Time (hrs)	10.3	10.3	10.1	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	10.99	11.13	10.91	0.10	3
Spray Zone Pressure Drop (in H2O)	2.89	2.90	2.88	0.01	3
VME Pressure Drop (in H2O)	0.30	0.31	0.30	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	676	702	650	21	3

PHV-273 Process Summary Report
11/20/95 17:00:00 to 11/20/95 18:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	73.6	75.6	72.6	0.8	12
SO2 Removal (NTU)	1.33	1.41	1.29	0.03	12
L/G Ratio (gal/macf)	55	55	55	0	12
Reaction Tank pH	5.68	5.69	5.66	0.01	12
Absorber pH	4.91	5.02	4.86	0.04	12
Flue Gas Flow Rate (scfm)	19899	19903	19896	2	12
Header 1 Flow (gpm)	650	650	650	0	12
Header 3 Flow (gpm)	650	650	650	0	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.54	1.60	0.06	0.56	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	12.50	12.55	12.46	0.02	12
Reagent Feed to FLRT (gpm)	2.40	2.41	2.39	0.00	12
Facility Inlet SO2 Conc. (ppm)	1706	1711	1696	4	12
Inlet SO2 Concentration (ppm)	2000	2002	1996	2	12
Outlet SO2 Concentration (ppm)	492	510	454	14	12
Inlet O2 Concentration (%)	6.07	6.10	6.02	0.02	12
Outlet O2 Concentration (%)	5.50	5.57	5.43	0.05	12
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.0	12
Inlet Gas Temperature (F)	341	341	340	0	12
Outlet Gas Temperature (F)	126	127	126	0	12
SO2 Absorbed (mmole/L)	7.13	7.32	7.03	0.07	12
Solids Residence Time (hrs)	7.6	7.7	7.4	0.1	12
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	12
Absorber Pressure Drop (in H2O)	20.47	20.61	20.37	0.06	12
Spray Zone Pressure Drop (in H2O)	4.77	4.85	4.69	0.04	12
VME Pressure Drop (in H2O)	0.96	1.04	0.94	0.04	12
Oxidation Air to Rxn Tank (acfm)	440	449	437	3	12
NYSEG Load (MW)	699	701	697	1	12

PHV-274 Process Summary Report
11/20/95 23:00:00 to 11/21/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	62.7	63.6	61.9	0.6	12
SO2 Removal (NTU)	0.99	1.01	0.96	0.02	12
L/G Ratio (gal/macf)	63	63	63	0	12
Reaction Tank pH	5.41	5.46	5.34	0.04	12
Absorber pH	4.41	4.44	4.39	0.02	12
Flue Gas Flow Rate (scfm)	17401	17419	17391	7	12
Header 1 Flow (gpm)	650	650	650	0	12
Header 3 Flow (gpm)	650	650	650	0	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.54	1.60	0.06	0.56	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.00	8.00	8.00	0.00	12
Reagent Feed to FLRT (gpm)	2.25	2.31	2.14	0.07	12
Facility Inlet SO2 Conc. (ppm)	1468	1559	1323	90	12
Inlet SO2 Concentration (ppm)	1986	2002	1947	18	12
Outlet SO2 Concentration (ppm)	694	715	665	18	12
Inlet O2 Concentration (%)	7.98	8.98	7.32	0.64	12
Outlet O2 Concentration (%)	7.32	8.22	6.75	0.60	12
Absorber Gas Velocity (ft/sec)	17.5	17.6	17.5	0.0	12
Inlet Gas Temperature (F)	320	323	318	2	12
Outlet Gas Temperature (F)	123	123	122	0	12
SO2 Absorbed (mmole/L)	5.27	5.35	5.23	0.04	12
Solids Residence Time (hrs)	10.3	10.3	10.1	0.1	12
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	12
Absorber Pressure Drop (in H2O)	14.41	14.47	14.32	0.05	12
Spray Zone Pressure Drop (in H2O)	3.62	3.68	3.58	0.04	12
VME Pressure Drop (in H2O)	0.50	0.56	0.48	0.02	12
Oxidation Air to Rxn Tank (acfm)	440	441	439	0	12
NYSEG Load (MW)	516	575	393	60	12

PHV-275 Process Summary Report
11/21/95 05:00:00 to 11/21/95 06:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	78.8	79.5	78.3	0.3	12
SO2 Removal (NTU)	1.55	1.59	1.53	0.02	12
L/G Ratio (gal/macf)	96	96	96	0	12
Reaction Tank pH	5.83	5.86	5.79	0.02	12
Absorber pH	4.85	4.91	4.79	0.04	12
Flue Gas Flow Rate (scfm)	11496	11513	11488	7	12
Header 1 Flow (gpm)	650	650	649	0	12
Header 3 Flow (gpm)	464	650	650	0	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.54	1.60	0.07	0.57	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.00	9.01	8.99	0.01	12
Reagent Feed to FLRT (gpm)	1.60	1.60	1.59	0.00	12
Facility Inlet SO2 Conc. (ppm)	1302	1444	1128	102	12
Inlet SO2 Concentration (ppm)	2005	2073	1945	37	12
Outlet SO2 Concentration (ppm)	400	420	387	10	12
Inlet O2 Concentration (%)	9.33	10.71	8.53	0.77	12
Outlet O2 Concentration (%)	8.67	9.85	7.87	0.68	12
Absorber Gas Velocity (ft/sec)	11.5	11.5	11.5	0.0	12
Inlet Gas Temperature (F)	292	293	292	1	12
Outlet Gas Temperature (F)	118	119	117	1	12
SO2 Absorbed (mmole/L)	4.43	4.55	4.27	0.08	12
Solids Residence Time (hrs)	12.2	12.7	11.9	0.2	12
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	12
Absorber Pressure Drop (in H2O)	5.94	6.03	5.87	0.04	12
Spray Zone Pressure Drop (in H2O)	2.34	2.37	2.30	0.03	12
VME Pressure Drop (in H2O)	0.17	0.17	0.16	0.00	12
Oxidation Air to Rxn Tank (acfm)	441	453	438	4	12
NYSEG Load (MW)	352	471	285	59	12

PHV-276 Process Summary Report
11/21/95 07:00:00 to 11/21/95 09:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	80.8	81.6	79.2	0.6	24
SO2 Removal (NTU)	1.65	1.69	1.57	0.03	24
L/G Ratio (gal/macf)	110	110	109	0	24
Reaction Tank pH	5.93	5.96	5.89	0.02	24
Absorber pH	5.33	5.43	5.21	0.07	24
Flue Gas Flow Rate (scfm)	10001	10020	9971	11	24
Header 1 Flow (gpm)	650	650	650	0	24
Header 3 Flow (gpm)	650	650	650	0	24
Header 5 Flow (gpm)	0	0	0	0	24
Blowdown to Sump Rate (gpm)	0.54	1.60	0.06	0.57	24
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.96	6.97	6.96	0.00	24
Reagent Feed to FLRT (gpm)	1.36	1.37	1.35	0.01	24
Facility Inlet SO2 Conc. (ppm)	1529	1611	1445	48	24
Inlet SO2 Concentration (ppm)	2000	2038	1941	19	24
Outlet SO2 Concentration (ppm)	363	400	346	12	24
Inlet O2 Concentration (%)	7.97	8.59	7.25	0.32	24
Outlet O2 Concentration (%)	7.44	8.02	6.89	0.31	24
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.0	0.0	24
Inlet Gas Temperature (F)	295	300	291	3	24
Outlet Gas Temperature (F)	120	120	119	0	24
SO2 Absorbed (mmole/L)	3.93	4.00	3.76	0.04	24
Solids Residence Time (hrs)	13.8	14.4	13.5	0.2	24
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	24
Absorber Pressure Drop (in H2O)	4.62	4.69	4.57	0.03	24
Spray Zone Pressure Drop (in H2O)	2.07	2.10	2.03	0.01	24
VME Pressure Drop (in H2O)	0.15	0.49	0.12	0.09	24
Oxidation Air to Rxn Tank (acfm)	441	449	436	2	24
NYSEG Load (MW)	599	704	499	55	24

PHV-232 Process Summary Report
11/21/95 15:30:00 to 11/21/95 16:30:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	78.9	80.5	77.9	0.7	12
SO2 Removal (NTU)	1.56	1.64	1.51	0.04	12
L/G Ratio (gal/macf)	54	54	53	0	12
Reaction Tank pH	5.81	5.85	5.80	0.01	12
Absorber pH	5.04	5.11	4.97	0.03	12
Flue Gas Flow Rate (scfm)	19904	19909	19900	3	12
Header 1 Flow (gpm)	650	650	650	0	12
Header 3 Flow (gpm)	647	650	616	9	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.54	1.60	0.06	0.56	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.54	10.00	8.00	0.85	12
Reagent Feed to FLRT (gpm)	2.70	2.70	2.69	0.00	12
Facility Inlet SO2 Conc. (ppm)	1707	1719	1682	9	12
Inlet SO2 Concentration (ppm)	2001	2012	1995	4	12
Outlet SO2 Concentration (ppm)	391	411	363	13	12
Inlet O2 Concentration (%)	6.10	6.19	6.03	0.04	12
Outlet O2 Concentration (%)	5.53	5.61	5.46	0.05	12
Absorber Gas Velocity (ft/sec)	20.3	20.4	20.3	0.0	12
Inlet Gas Temperature (F)	355	361	350	3	12
Outlet Gas Temperature (F)	128	128	127	0	12
SO2 Absorbed (mmole/L)	7.67	7.82	7.55	0.08	12
Solids Residence Time (hrs)	7.1	7.2	6.9	0.1	12
Slurry Residence Time (min)	4.40	4.51	4.39	0.03	12
Absorber Pressure Drop (in H2O)	19.35	19.53	19.19	0.10	12
Spray Zone Pressure Drop (in H2O)	5.01	5.09	4.88	0.06	12
VME Pressure Drop (in H2O)	0.93	1.03	0.89	0.04	12
Oxidation Air to Rxn Tank (acfm)	440	451	436	6	12
NYSEG Load (MW)	702	707	697	3	12

PHV-233 Process Summary Report
11/21/95 21:00:00 to 11/22/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	72.1	73.0	71.6	0.6	3
SO2 Removal (NTU)	1.28	1.31	1.26	0.02	3
L/G Ratio (gal/macf)	63	63	63	0	3
Reaction Tank pH	5.90	5.91	5.88	0.01	3
Absorber pH	5.01	5.04	4.97	0.03	3
Flue Gas Flow Rate (scfm)	17399	17402	17395	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.60	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.73	11.29	8.47	1.17	3
Reagent Feed to FLRT (gpm)	1.89	1.90	1.87	0.01	3
Facility Inlet SO2 Conc. (ppm)	1644	1668	1611	24	3
Inlet SO2 Concentration (ppm)	1998	2000	1994	2	3
Outlet SO2 Concentration (ppm)	521	534	502	14	3
Inlet O2 Concentration (%)	6.27	6.51	6.08	0.18	3
Outlet O2 Concentration (%)	5.74	5.99	5.56	0.18	3
Absorber Gas Velocity (ft/sec)	17.5	17.5	17.5	0.0	3
Inlet Gas Temperature (F)	319	327	315	5	3
Outlet Gas Temperature (F)	123	124	122	1	3
SO2 Absorbed (mmole/L)	6.10	6.17	6.06	0.05	3
Solids Residence Time (hrs)	8.9	8.9	8.8	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	13.54	13.55	13.53	0.01	3
Spray Zone Pressure Drop (in H2O)	2.85	2.87	2.82	0.02	3
VME Pressure Drop (in H2O)	0.44	0.45	0.44	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
NYSEG Load (MW)	683	700	648	24	3

PHV-234 Process Summary Report
11/22/95 01:00:00 to 11/22/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	72.8	73.2	72.2	0.4	3
SO2 Removal (NTU)	1.30	1.32	1.28	0.01	3
L/G Ratio (gal/macf)	74	74	74	0	3
Reaction Tank pH	6.04	6.05	6.03	0.01	3
Absorber pH	4.83	4.90	4.76	0.06	3
Flue Gas Flow Rate (scfm)	14904	14909	14902	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.97	7.97	7.97	0.00	3
Reagent Feed to FLRT (gpm)	1.67	1.71	1.65	0.03	3
Facility Inlet SO2 Conc. (ppm)	1226	1377	1083	120	3
Inlet SO2 Concentration (ppm)	1993	1999	1987	5	3
Outlet SO2 Concentration (ppm)	511	518	504	6	3
Inlet O2 Concentration (%)	9.54	10.56	8.41	0.88	3
Outlet O2 Concentration (%)	8.81	9.77	7.77	0.82	3
Absorber Gas Velocity (ft/sec)	14.9	15.0	14.9	0.04	3
Inlet Gas Temperature (F)	302	307	299	4	3
Outlet Gas Temperature (F)	120	121	118	1	3
SO2 Absorbed (mmole/L)	5.26	5.31	5.21	0.04	3
Solids Residence Time (hrs)	10.3	10.4	10.2	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	8.75	8.82	8.67	0.06	3
Spray Zone Pressure Drop (in H2O)	2.12	2.13	2.12	0.01	3
VME Pressure Drop (in H2O)	0.30	0.30	0.30	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
NYSEG Load (MW)	352	470	254	90	3

PHV-235 Process Summary Report
11/22/95 05:00:00 to 11/22/95 08:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	80.3	80.9	80.0	0.4	3
SO2 Removal (NTU)	1.63	1.65	1.61	0.02	3
L/G Ratio (gal/macf)	111	111	110	0	3
Reaction Tank pH	6.06	6.09	6.04	0.02	3
Absorber pH	4.72	4.75	4.69	0.03	3
Flue Gas Flow Rate (scfm)	9996	9998	9993	2	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.98	7.55	6.20	0.57	3
Reagent Feed to FLRT (gpm)	1.20	1.26	1.17	0.04	3
Facility Inlet SO2 Conc. (ppm)	1457	1563	1294	117	3
Inlet SO2 Concentration (ppm)	2003	2006	2002	2	3
Outlet SO2 Concentration (ppm)	374	380	364	7	3
Inlet O2 Concentration (%)	8.28	9.10	7.77	0.59	3
Outlet O2 Concentration (%)	7.80	8.59	7.28	0.57	3
Absorber Gas Velocity (ft/sec)	9.9	10.0	9.9	0.04	3
Inlet Gas Temperature (F)	273	282	267	7	3
Outlet Gas Temperature (F)	117	118	115	1	3
SO2 Absorbed (mmole/L)	3.92	3.95	3.90	0.02	3
Solids Residence Time (hrs)	13.8	13.9	13.7	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	3.90	3.92	3.88	0.02	3
Spray Zone Pressure Drop (in H2O)	1.37	1.37	1.36	0.00	3
VME Pressure Drop (in H2O)	0.13	0.13	0.13	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	567	684	363	145	3

PHV-233R Process Summary Report
11/22/95 10:00:00 to 11/22/95 12:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	70.0	72.9	68.5	1.0	24
SO2 Removal (NTU)	1.20	1.31	1.16	0.03	24
L/G Ratio (gal/macf)	63	63	62	0	24
Reaction Tank pH	5.73	5.75	5.70	0.01	24
Absorber pH	4.91	5.01	4.86	0.03	24
Flue Gas Flow Rate (scfm)	17397	17402	17390	3	24
Header 1 Flow (gpm)	650	650	649	0	24
Header 3 Flow (gpm)	650	650	650	0	24
Header 5 Flow (gpm)	0	0	0	0	24
Blowdown to Sump Rate (gpm)	0.61	1.80	0.07	0.68	24
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.30	11.98	7.99	1.12	24
Reagent Feed to FLRT (gpm)	1.69	1.81	1.65	0.07	24
Facility Inlet SO2 Conc. (ppm)	1749	1802	1711	30	24
Inlet SO2 Concentration (ppm)	2002	2016	1988	8	24
Outlet SO2 Concentration (ppm)	561	589	507	19	24
Inlet O2 Concentration (%)	6.21	6.45	5.84	0.18	24
Outlet O2 Concentration (%)	5.68	5.90	5.31	0.18	24
Absorber Gas Velocity (ft/sec)	17.6	17.7	17.6	0.05	24
Inlet Gas Temperature (F)	330	338	323	6	24
Outlet Gas Temperature (F)	125	126	124	1	24
SO2 Absorbed (mmole/L)	5.94	6.17	5.81	0.09	24
Solids Residence Time (hrs)	9.1	9.3	8.8	0.1	24
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	24
Absorber Pressure Drop (in H2O)	13.29	13.62	13.04	0.16	24
Spray Zone Pressure Drop (in H2O)	2.87	3.04	2.78	0.08	24
VME Pressure Drop (in H2O)	0.45	0.52	0.44	0.03	24
Oxidation Air to Rxn Tank (acfm)	440	449	436	97	24
NYSEG Load (MW)	693	696	690	1	24

PHV-238 Process Summary Report
11/22/95 13:00:00 to 11/22/95 16:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	45.3	45.8	44.9	0.4	3
SO2 Removal (NTU)	0.60	0.61	0.60	0.01	3
L/G Ratio (gal/macf)	37	37	37	0	3
Reaction Tank pH	5.93	5.95	5.91	0.02	3
Absorber pH	4.78	4.81	4.77	0.02	3
Flue Gas Flow Rate (scfm)	14900	14902	14898	2	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.62	0.63	0.61	0.01	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.88	8.13	5.50	1.08	3
Reagent Feed to FLRT (gpm)	0.96	1.04	0.91	0.06	3
Facility Inlet SO2 Conc. (ppm)	1735	1755	1717	15	3
Inlet SO2 Concentration (ppm)	2000	2001	2000	0	3
Outlet SO2 Concentration (ppm)	1027	1035	1017	8	3
Inlet O2 Concentration (%)	6.46	6.58	6.31	0.11	3
Outlet O2 Concentration (%)	5.92	6.05	5.77	0.11	3
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.02	3
Inlet Gas Temperature (F)	315	315	314	1	3
Outlet Gas Temperature (F)	124	125	123	1	3
SO2 Absorbed (mmole/L)	6.58	6.65	6.51	0.06	3
Solids Residence Time (hrs)	16.4	16.6	16.3	0.1	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	7.50	7.53	7.46	0.03	3
Spray Zone Pressure Drop (in H2O)	0.89	0.89	0.88	0.00	3
VME Pressure Drop (in H2O)	0.31	0.31	0.31	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	669	677	658	8	3

PHV-236 Process Summary Report
11/22/95 17:00:00 to 11/22/95 20:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	41.2	42.3	39.8	1.0	3
SO2 Removal (NTU)	0.53	0.55	0.51	0.02	3
L/G Ratio (gal/macf)	27	27	27	0	3
Reaction Tank pH	5.81	5.84	5.78	0.03	3
Absorber pH	4.91	4.96	4.85	0.05	3
Flue Gas Flow Rate (scfm)	19901	19901	19900	0	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.64	8.00	7.07	0.41	3
Reagent Feed to FLRT (gpm)	1.06	1.15	1.00	0.06	3
Facility Inlet SO2 Conc. (ppm)	1778	1783	1770	6	3
Inlet SO2 Concentration (ppm)	2001	2002	2000	1	3
Outlet SO2 Concentration (ppm)	1097	1123	1075	20	3
Inlet O2 Concentration (%)	5.87	5.89	5.84	0.02	3
Outlet O2 Concentration (%)	5.32	5.33	5.31	0.01	3
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.02	3
Inlet Gas Temperature (F)	339	342	337	2	3
Outlet Gas Temperature (F)	127	127	127	0	3
SO2 Absorbed (mmole/L)	7.99	8.20	7.72	0.20	3
Solids Residence Time (hrs)	13.6	14.0	13.2	0.3	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	16.15	16.47	15.81	0.27	3
Spray Zone Pressure Drop (in H2O)	1.54	1.54	1.54	0.00	3
VME Pressure Drop (in H2O)	0.68	0.69	0.68	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	685	698	675	10	3

PHV-237 Process Summary Report
11/22/95 21:00:00 to 11/23/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	40.0	40.4	39.8	0.3	3
SO2 Removal (NTU)	0.51	0.52	0.51	0.01	3
L/G Ratio (gal/macf)	31	31	31	0	3
Reaction Tank pH	5.78	5.80	5.76	0.02	3
Absorber pH	4.72	4.78	4.63	0.06	3
Flue Gas Flow Rate (scfm)	17401	17405	17398	3	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.41	4.86	4.00	0.35	3
Reagent Feed to FLRT (gpm)	0.93	0.99	0.90	0.04	3
Facility Inlet SO2 Conc. (ppm)	1698	1769	1586	80	3
Inlet SO2 Concentration (ppm)	1997	2002	1993	4	3
Outlet SO2 Concentration (ppm)	1123	1126	1117	4	3
Inlet O2 Concentration (%)	6.53	7.32	6.04	0.57	3
Outlet O2 Concentration (%)	5.96	6.71	5.51	0.53	3
Absorber Gas Velocity (ft/sec)	17.6	17.6	17.6	0.03	3
Inlet Gas Temperature (F)	321	323	317	3	3
Outlet Gas Temperature (F)	125	126	124	1	3
SO2 Absorbed (mmole/L)	6.77	6.86	6.72	0.06	3
Solids Residence Time (hrs)	16.0	16.1	15.8	0.1	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	12.66	12.90	12.42	0.20	3
Spray Zone Pressure Drop (in H2O)	1.20	1.21	1.19	0.01	3
VME Pressure Drop (in H2O)	0.44	0.44	0.44	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	633	674	567	47	3

PHV-239 Process Summary Report
11/23/95 01:00:00 to 11/23/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	51.3	51.4	51.2	0.1	3
SO2 Removal (NTU)	0.72	0.72	0.72	0.00	3
L/G Ratio (gal/macf)	55	55	55	0	3
Reaction Tank pH	5.86	5.86	5.86	0.00	3
Absorber pH	4.89	4.95	4.82	0.05	3
Flue Gas Flow Rate (scfm)	10001	10001	10001	0	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	2.74	3.14	1.94	0.57	3
Reagent Feed to FLRT (gpm)	0.74	0.76	0.72	0.02	3
Facility Inlet SO2 Conc. (ppm)	1347	1389	1312	32	3
Inlet SO2 Concentration (ppm)	2000	2001	1998	1	3
Outlet SO2 Concentration (ppm)	918	920	916	1	3
Inlet O2 Concentration (%)	9.65	9.84	9.39	0.19	3
Outlet O2 Concentration (%)	8.95	9.11	8.76	0.15	3
Absorber Gas Velocity (ft/sec)	10.0	10.1	10.0	0.02	3
Inlet Gas Temperature (F)	293	293	292	0	3
Outlet Gas Temperature (F)	118	119	115	2	3
SO2 Absorbed (mmole/L)	4.99	5.00	4.98	0.01	3
Solids Residence Time (hrs)	21.7	21.7	21.6	0.0	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	3.19	3.19	3.19	0.00	3
Spray Zone Pressure Drop (in H2O)	0.64	0.64	0.63	0.00	3
VME Pressure Drop (in H2O)	0.14	0.14	0.14	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
NYSEG Load (MW)	381	420	347	30	3

PHV-236R Process Summary Report
11/23/95 05:00:00 to 11/23/95 08:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	43.7	43.8	43.6	0.1	3
SO2 Removal (NTU)	0.57	0.58	0.57	0.00	3
L/G Ratio (gal/macf)	27	27	27	0	3
Reaction Tank pH	5.85	5.86	5.83	0.01	3
Absorber pH	4.79	4.87	4.74	0.06	3
Flue Gas Flow Rate (scfm)	19898	19900	19895	2	3
Header 1 Flow (gpm)	0	0	0	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.82	7.50	5.47	0.96	3
Reagent Feed to FLRT (gpm)	1.26	1.28	1.23	0.02	3
Facility Inlet SO2 Conc. (ppm)	1419	1494	1374	53	3
Inlet SO2 Concentration (ppm)	2007	2010	2002	4	3
Outlet SO2 Concentration (ppm)	1051	1054	1047	3	3
Inlet O2 Concentration (%)	8.91	9.22	8.46	0.33	3
Outlet O2 Concentration (%)	8.17	8.44	7.76	0.29	3
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.01	3
Inlet Gas Temperature (F)	343	344	342	1	3
Outlet Gas Temperature (F)	125	125	124	0	3
SO2 Absorbed (mmole/L)	8.49	8.50	8.47	0.01	3
Solids Residence Time (hrs)	12.7	12.8	12.7	0.0	3
Slurry Residence Time (min)	8.79	8.79	8.79	0.00	3
Absorber Pressure Drop (in H2O)	16.45	16.75	16.12	0.26	3
Spray Zone Pressure Drop (in H2O)	1.54	1.55	1.54	0.00	3
VME Pressure Drop (in H2O)	0.69	0.69	0.69	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	317	363	292	33	3

PHV-228 Process Summary Report
11/23/95 09:00:00 to 11/23/95 12:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	83.2	83.6	82.8	0.3	3
SO2 Removal (NTU)	1.78	1.81	1.76	0.02	3
L/G Ratio (gal/macf)	71	71	71	0	3
Reaction Tank pH	5.58	5.64	5.49	0.06	3
Absorber pH	5.21	5.29	5.16	0.06	3
Flue Gas Flow Rate (scfm)	19903	19904	19903	0	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.75	11.00	7.59	1.54	3
Reagent Feed to FLRT (gpm)	2.62	2.64	2.61	0.01	3
Facility Inlet SO2 Conc. (ppm)	1759	1761	1758	1	3
Inlet SO2 Concentration (ppm)	2000	2000	1999	1	3
Outlet SO2 Concentration (ppm)	313	320	306	6	3
Inlet O2 Concentration (%)	6.06	6.10	6.03	0.03	3
Outlet O2 Concentration (%)	5.52	5.55	5.48	0.03	3
Absorber Gas Velocity (ft/sec)	20.3	20.3	20.2	0.06	3
Inlet Gas Temperature (F)	351	358	343	6	3
Outlet Gas Temperature (F)	127	128	127	1	3
SO2 Absorbed (mmole/L)	6.16	6.19	6.13	0.02	3
Solids Residence Time (hrs)	6.7	6.7	6.7	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	21.93	22.45	21.59	0.37	3
Spray Zone Pressure Drop (in H2O)	5.31	5.70	5.05	0.28	3
VME Pressure Drop (in H2O)	0.89	0.93	0.86	0.03	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
NYSEG Load (MW)	665	681	654	11	3

PHV-229 Process Summary Report
11/23/95 13:00:00 to 11/23/95 16:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	85.2	85.3	85.2	0.0	3
SO2 Removal (NTU)	1.91	1.92	1.91	0.00	3
L/G Ratio (gal/macf)	82	82	82	0	3
Reaction Tank pH	5.76	5.77	5.74	0.01	3
Absorber pH	5.32	5.33	5.30	0.01	3
Flue Gas Flow Rate (scfm)	17399	17404	17396	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.53	10.58	9.00	0.74	3
Reagent Feed to FLRT (gpm)	2.33	2.34	2.33	0.01	3
Facility Inlet SO2 Conc. (ppm)	1634	1699	1597	46	3
Inlet SO2 Concentration (ppm)	2003	2008	1999	4	3
Outlet SO2 Concentration (ppm)	277	277	276	0	3
Inlet O2 Concentration (%)	7.34	7.58	6.88	0.33	3
Outlet O2 Concentration (%)	6.79	7.00	6.38	0.29	3
Absorber Gas Velocity (ft/sec)	17.6	17.6	17.5	0.02	3
Inlet Gas Temperature (F)	323	325	320	2	3
Outlet Gas Temperature (F)	124	124	123	0	3
SO2 Absorbed (mmole/L)	5.53	5.55	5.52	0.01	3
Solids Residence Time (hrs)	7.5	7.5	7.5	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	14.98	15.01	14.95	0.02	3
Spray Zone Pressure Drop (in H2O)	3.79	3.81	3.76	0.02	3
VME Pressure Drop (in H2O)	0.50	0.50	0.50	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	1	3
NYSEG Load (MW)	567	615	542	34	3

PHV-230 Process Summary Report
11/23/95 17:00:00 to 11/23/95 20:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	81.8	82.7	81.3	0.6	3
SO2 Removal (NTU)	1.71	1.75	1.68	0.03	3
L/G Ratio (gal/macf)	96	96	96	0	3
Reaction Tank pH	5.84	5.85	5.83	0.01	3
Absorber pH	6.15	6.24	6.03	0.09	3
Flue Gas Flow Rate (scfm)	14900	14903	14897	2	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	9.15	9.46	9.00	0.21	3
Reagent Feed to FLRT (gpm)	1.93	1.96	1.92	0.02	3
Facility Inlet SO2 Conc. (ppm)	1805	1822	1797	12	3
Inlet SO2 Concentration (ppm)	2000	2002	1999	1	3
Outlet SO2 Concentration (ppm)	341	351	325	12	3
Inlet O2 Concentration (%)	6.36	6.44	6.22	0.10	3
Outlet O2 Concentration (%)	5.86	5.94	5.71	0.10	3
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.01	3
Inlet Gas Temperature (F)	314	316	313	1	3
Outlet Gas Temperature (F)	124	124	124	0	3
SO2 Absorbed (mmole/L)	4.54	4.59	4.52	0.03	3
Solids Residence Time (hrs)	9.1	9.2	9.0	0.1	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	10.62	10.71	10.53	0.07	3
Spray Zone Pressure Drop (in H2O)	2.91	3.00	2.86	0.06	3
VME Pressure Drop (in H2O)	0.33	0.35	0.32	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	441	440	0	3
NYSEG Load (MW)	668	676	654	10	3

PHV-231 Process Summary Report
11/23/95 21:00:00 to 11/24/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	87.6	87.8	87.3	0.2	3
SO2 Removal (NTU)	2.09	2.11	2.07	0.02	3
L/G Ratio (gal/macf)	144	144	144	0	3
Reaction Tank pH	5.93	5.93	5.92	0.00	3
Absorber pH	6.21	6.24	6.19	0.02	3
Flue Gas Flow Rate (scfm)	10002	10004	10001	1	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.39	8.50	8.17	0.16	3
Reagent Feed to FLRT (gpm)	1.35	1.35	1.35	0.00	3
Facility Inlet SO2 Conc. (ppm)	1738	1794	1704	40	3
Inlet SO2 Concentration (ppm)	1999	2002	1995	3	3
Outlet SO2 Concentration (ppm)	234	239	230	4	3
Inlet O2 Concentration (%)	7.86	8.07	7.49	0.26	3
Outlet O2 Concentration (%)	7.35	7.56	7.00	0.25	3
Absorber Gas Velocity (ft/sec)	10.0	10.0	10.0	0.00	3
Inlet Gas Temperature (F)	286	287	285	1	3
Outlet Gas Temperature (F)	119	120	119	0	3
SO2 Absorbed (mmole/L)	3.26	3.27	3.26	0.01	3
Solids Residence Time (hrs)	12.7	12.7	12.7	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	4.77	4.78	4.77	0.00	3
Spray Zone Pressure Drop (in H2O)	1.88	1.88	1.86	0.01	3
VME Pressure Drop (in H2O)	0.14	0.14	0.14	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	633	669	583	36	3

PHV-228R Process Summary Report
11/24/95 01:00:00 to 11/24/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	90.5	91.4	89.3	0.9	3
SO2 Removal (NTU)	2.36	2.45	2.23	0.09	3
L/G Ratio (gal/macf)	72	72	72	0	3
Reaction Tank pH	5.80	5.82	5.77	0.02	3
Absorber pH	5.98	6.03	5.92	0.05	3
Flue Gas Flow Rate (scfm)	19901	19901	19900	0	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	12.00	12.50	11.50	0.41	3
Reagent Feed to FLRT (gpm)	2.79	2.82	2.76	0.02	3
Facility Inlet SO2 Conc. (ppm)	1149	1246	1074	72	3
Inlet SO2 Concentration (ppm)	1999	2015	1980	14	3
Outlet SO2 Concentration (ppm)	176	198	161	16	3
Inlet O2 Concentration (%)	10.88	11.46	10.11	0.57	3
Outlet O2 Concentration (%)	10.07	10.64	9.36	0.53	3
Absorber Gas Velocity (ft/sec)	20.1	20.1	20.1	0.00	3
Inlet Gas Temperature (F)	337	338	335	1	3
Outlet Gas Temperature (F)	122	122	121	0	3
SO2 Absorbed (mmole/L)	6.71	6.82	6.55	0.12	3
Solids Residence Time (hrs)	6.2	6.3	6.1	0.1	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	22.02	22.47	21.40	0.45	3
Spray Zone Pressure Drop (in H2O)	5.62	5.90	5.20	0.30	3
VME Pressure Drop (in H2O)	0.95	0.95	0.94	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	217	242	194	19	3

PHV-277 Process Summary Report
11/24/95 05:00:00 to 11/24/95 08:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	73.7	73.9	73.4	0.2	3
SO2 Removal (NTU)	1.33	1.34	1.33	0.01	3
L/G Ratio (gal/macf)	74	74	74	0	3
Reaction Tank pH	5.87	5.88	5.87	0.00	3
Absorber pH	5.27	5.33	5.23	0.05	3
Flue Gas Flow Rate (scfm)	14898	14901	14894	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.56	8.96	8.21	0.31	3
Reagent Feed to FLRT (gpm)	1.70	1.71	1.70	0.00	3
Facility Inlet SO2 Conc. (ppm)	1149	1246	1074	72	3
Inlet SO2 Concentration (ppm)	2004	2012	1998	6	3
Outlet SO2 Concentration (ppm)	496	499	494	3	3
Inlet O2 Concentration (%)	9.66	10.20	8.75	0.64	3
Outlet O2 Concentration (%)	8.97	9.43	8.12	0.60	3
Absorber Gas Velocity (ft/sec)	15.0	15.0	14.9	0.01	3
Inlet Gas Temperature (F)	305	306	304	1	3
Outlet Gas Temperature (F)	119	120	119	1	3
SO2 Absorbed (mmole/L)	5.35	5.39	5.33	0.03	3
Solids Residence Time (hrs)	10.1	10.2	10.0	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	9.50	9.68	9.41	0.13	3
Spray Zone Pressure Drop (in H2O)	2.07	2.07	2.07	0.00	3
VME Pressure Drop (in H2O)	0.32	0.32	0.32	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	217	242	194	19	3

PHV-278 Process Summary Report
11/24/95 09:00:00 to 11/24/95 12:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	82.9	83.4	82.5	0.4	3
SO2 Removal (NTU)	1.77	1.79	1.74	0.02	3
L/G Ratio (gal/macf)	110	110	110	0	3
Reaction Tank pH	5.95	5.96	5.93	0.01	3
Absorber pH	4.80	4.85	4.75	0.04	3
Flue Gas Flow Rate (scfm)	9999	10000	9999	0	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.86	8.50	6.00	1.16	3
Reagent Feed to FLRT (gpm)	1.18	1.30	0.96	0.16	3
Facility Inlet SO2 Conc. (ppm)	1480	1534	1446	38	3
Inlet SO2 Concentration (ppm)	2001	2002	2000	1	3
Outlet SO2 Concentration (ppm)	322	330	314	7	3
Inlet O2 Concentration (%)	8.97	9.27	8.46	0.37	3
Outlet O2 Concentration (%)	8.38	8.64	7.93	0.32	3
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.0	0.01	3
Inlet Gas Temperature (F)	293	295	290	2	3
Outlet Gas Temperature (F)	119	119	119	0	3
SO2 Absorbed (mmole/L)	4.04	4.06	4.02	0.02	3
Solids Residence Time (hrs)	13.4	13.5	13.3	0.1	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	4.31	4.31	4.31	0.00	3
Spray Zone Pressure Drop (in H2O)	1.47	1.47	1.46	0.00	3
VME Pressure Drop (in H2O)	0.15	0.15	0.14	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	476	497	461	15	3

PHV-279 Process Summary Report
11/24/95 18:00:00 to 11/24/95 20:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	73.0	74.1	72.4	0.5	24
SO2 Removal (NTU)	1.31	1.35	1.29	0.02	24
L/G Ratio (gal/macf)	55	55	54	0	24
Reaction Tank pH	5.59	5.63	5.57	0.02	24
Absorber pH	5.75	5.83	5.69	0.04	24
Flue Gas Flow Rate (scfm)	19897	19916	19877	9	24
Header 1 Flow (gpm)	650	650	649	0	24
Header 3 Flow (gpm)	650	650	650	0	24
Header 5 Flow (gpm)	0	0	0	0	24
Blowdown to Sump Rate (gpm)	0.61	1.80	0.07	0.63	24
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	12.00	12.01	11.99	0.01	24
Reagent Feed to FLRT (gpm)	2.00	2.00	2.00	0.00	24
Facility Inlet SO2 Conc. (ppm)	1673	1717	1574	32	24
Inlet SO2 Concentration (ppm)	2005	2052	1984	16	24
Outlet SO2 Concentration (ppm)	504	519	482	9	24
Inlet O2 Concentration (%)	6.18	7.11	5.84	0.29	24
Outlet O2 Concentration (%)	5.64	6.53	5.30	0.29	24
Absorber Gas Velocity (ft/sec)	20.2	20.3	20.1	0.05	24
Inlet Gas Temperature (F)	341	347	335	4	24
Outlet Gas Temperature (F)	126	127	125	1	24
SO2 Absorbed (mmole/L)	7.09	7.31	6.97	0.08	24
Solids Residence Time (hrs)	7.6	7.8	7.4	0.1	24
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	24
Absorber Pressure Drop (in H2O)	18.32	18.68	18.06	0.18	24
Spray Zone Pressure Drop (in H2O)	4.50	4.59	4.41	0.06	24
VME Pressure Drop (in H2O)	0.97	1.07	0.94	0.04	24
Oxidation Air to Rxn Tank (acfm)	440	443	437	1	24
NYSEG Load (MW)	661	686	572	28	24

PHV-280 Process Summary Report
11/24/95 22:00:00 to 11/25/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	69.9	71.0	68.9	0.6	24
SO2 Removal (NTU)	1.20	1.24	1.17	0.02	24
L/G Ratio (gal/macf)	73	74	73	0	24
Reaction Tank pH	5.77	5.78	5.75	0.01	24
Absorber pH	5.26	5.39	5.06	0.10	24
Flue Gas Flow Rate (scfm)	14901	14917	14892	6	24
Header 1 Flow (gpm)	650	650	650	0	24
Header 3 Flow (gpm)	650	650	650	0	24
Header 5 Flow (gpm)	0	0	0	0	24
Blowdown to Sump Rate (gpm)	0.61	1.80	0.07	0.64	24
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	7.50	7.51	7.49	0.00	24
Reagent Feed to FLRT (gpm)	1.58	1.61	1.55	0.03	24
Facility Inlet SO2 Conc. (ppm)	1682	1727	1628	29	24
Inlet SO2 Concentration (ppm)	2000	2021	1986	8	24
Outlet SO2 Concentration (ppm)	565	587	545	12	24
Inlet O2 Concentration (%)	6.39	6.90	6.08	0.25	24
Outlet O2 Concentration (%)	5.88	6.41	5.56	0.25	24
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.0	0.03	24
Inlet Gas Temperature (F)	315	317	313	1	24
Outlet Gas Temperature (F)	123	124	119	1	24
SO2 Absorbed (mmole/L)	5.07	5.15	5.00	0.04	24
Solids Residence Time (hrs)	10.7	10.8	10.5	0.1	24
Slurry Residence Time (min)	4.39	4.40	4.39	0.00	24
Absorber Pressure Drop (in H2O)	8.89	9.07	8.48	0.14	24
Spray Zone Pressure Drop (in H2O)	2.11	2.20	2.05	0.04	24
VME Pressure Drop (in H2O)	0.38	1.81	0.31	0.30	24
Oxidation Air to Rxn Tank (acfm)	440	442	439	1	24
NYSEG Load (MW)	660	686	593	32	24

PHV-281 Process Summary Report
11/25/95 01:00:00 to 11/25/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	80.4	80.5	80.2	0.2	3
SO2 Removal (NTU)	1.63	1.64	1.62	0.01	3
L/G Ratio (gal/macf)	110	110	110	0	3
Reaction Tank pH	5.83	5.83	5.82	0.01	3
Absorber pH	4.60	4.65	4.57	0.04	3
Flue Gas Flow Rate (scfm)	10000	10001	9999	1	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.00	4.00	4.00	0.00	3
Reagent Feed to FLRT (gpm)	1.16	1.16	1.16	0.00	3
Facility Inlet SO2 Conc. (ppm)	1712	1747	1654	41	3
Inlet SO2 Concentration (ppm)	2001	2002	2000	1	3
Outlet SO2 Concentration (ppm)	371	375	368	3	3
Inlet O2 Concentration (%)	7.10	7.37	6.96	0.19	3
Outlet O2 Concentration (%)	6.62	6.87	6.48	0.18	3
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.1	0.01	3
Inlet Gas Temperature (F)	292	292	290	1	3
Outlet Gas Temperature (F)	121	121	120	0	3
SO2 Absorbed (mmole/L)	3.91	3.92	3.90	0.01	3
Solids Residence Time (hrs)	13.8	13.9	13.8	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	4.02	4.03	4.01	0.01	3
Spray Zone Pressure Drop (in H2O)	1.47	1.47	1.47	0.00	3
VME Pressure Drop (in H2O)	0.14	0.14	0.14	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	0	3
NYSEG Load (MW)	684	685	683	1	3

PHV-282 Process Summary Report
11/25/95 05:00:00 to 11/25/95 08:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	88.4	88.5	88.4	0.1	3
SO2 Removal (NTU)	2.16	2.16	2.15	0.00	3
L/G Ratio (gal/macf)	144	144	144	0	3
Reaction Tank pH	5.83	5.85	5.82	0.01	3
Absorber pH	6.32	6.39	6.23	0.07	3
Flue Gas Flow Rate (scfm)	10000	10002	9999	1	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	5.92	7.44	5.00	1.08	3
Reagent Feed to FLRT (gpm)	1.30	1.30	1.30	0.00	3
Facility Inlet SO2 Conc. (ppm)	1714	1738	1689	20	3
Inlet SO2 Concentration (ppm)	2000	2001	1999	1	3
Outlet SO2 Concentration (ppm)	219	220	218	1	3
Inlet O2 Concentration (%)	7.21	7.50	7.03	0.21	3
Outlet O2 Concentration (%)	6.74	7.01	6.58	0.19	3
Absorber Gas Velocity (ft/sec)	10.0	10.1	10.0	0.01	3
Inlet Gas Temperature (F)	286	289	283	2	3
Outlet Gas Temperature (F)	121	121	120	0	3
SO2 Absorbed (mmole/L)	3.29	3.30	3.29	0.00	3
Solids Residence Time (hrs)	12.6	12.6	12.5	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	4.70	4.72	4.69	0.01	3
Spray Zone Pressure Drop (in H2O)	1.98	1.98	1.97	0.00	3
VME Pressure Drop (in H2O)	0.14	0.15	0.14	0.01	3
Oxidation Air to Rxn Tank (acfm)	440	440	439	0	3
NYSEG Load (MW)	674	685	652	15	3

PHV-283 Process Summary Report
11/25/95 11:15:00 to 11/25/95 12:15:00

Process Variable	Average	Max.	Min.	Std. Dev.	Points
SO2 Removal (%)	80.8	83.2	78.0	1.3	29
SO2 Removal (NTU)	1.65	1.78	1.51	0.07	29
L/G Ratio (gal/macf)	96	96	96	0	29
Reaction Tank pH	5.77	5.81	5.64	0.05	29
Absorber pH	6.31	6.35	6.18	0.05	29
Flue Gas Flow Rate (scfm)	14899	14921	14878	8	29
Header 1 Flow (gpm)	650	650	650	0	29
Header 3 Flow (gpm)	650	650	650	0	29
Header 5 Flow (gpm)	400	400	400	0	29
Blowdown to Sump Rate (gpm)	0.63	1.80	0.07	0.71	29
Vacuum Belt Feed Rate (gpm)	-	-	-	-	-
Centrifuge Feed Rate (gpm)	10.65	12.05	8.25	1.04	29
Reagent Feed to FLRT (gpm)	1.59	1.80	1.39	0.20	29
Facility Inlet SO2 Conc. (ppm)	1659	1734	1612	33	29
Inlet SO2 Concentration (ppm)	1997	2016	1971	11	29
Outlet SO2 Concentration (ppm)	360	414	312	24	29
Inlet O2 Concentration (%)	7.03	7.41	6.41	0.28	29
Outlet O2 Concentration (%)	6.49	6.87	5.88	0.26	29
Absorber Gas Velocity (ft/sec)	15.06	15.09	14.99	0.03	29
Inlet Gas Temperature (F)	312	317	306	4	29
Outlet Gas Temperature (F)	123	124	123	0	29
SO2 Absorbed (mmole/L)	4.48	4.59	4.34	0.07	29
Solids Residence Time (hrs)	9.2	9.5	9.0	0.2	29
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	29
Absorber Pressure Drop (in H2O)	9.79	9.92	9.68	0.06	29
Spray Zone Pressure Drop (in H2O)	3.04	3.16	2.98	0.04	29
VME Pressure Drop (in H2O)	0.33	0.36	0.32	0.01	29
Oxidation Air to Rxn Tank (acfm)	440	452	437	2	29
NYSEG Load (MW)	602	699	568	42	29

PHV-284 Process Summary Report
11/25/95 16:00:00 to 11/25/95 20:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	83.6	84.0	83.5	0.2	4
SO2 Removal (NTU)	1.81	1.83	1.80	0.01	4
L/G Ratio (gal/macf)	71	72	71	0	4
Reaction Tank pH	5.58	5.60	5.57	0.01	4
Absorber pH	5.97	6.01	5.93	0.03	4
Flue Gas Flow Rate (scfm)	19900	19902	19898	1	4
Header 1 Flow (gpm)	650	650	650	0	4
Header 3 Flow (gpm)	650	650	650	0	4
Header 5 Flow (gpm)	400	400	400	0	4
Blowdown to Sump Rate (gpm)	0.61	0.75	0.48	0.09	4
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	11.06	11.50	10.50	0.45	4
Reagent Feed to FLRT (gpm)	2.37	2.38	2.35	0.01	4
Facility Inlet SO2 Conc. (ppm)	1676	1743	1562	73	4
Inlet SO2 Concentration (ppm)	1997	2001	1992	4	4
Outlet SO2 Concentration (ppm)	305	307	298	4	4
Inlet O2 Concentration (%)	5.91	6.15	5.78	0.14	4
Outlet O2 Concentration (%)	5.40	5.61	5.28	0.13	4
Absorber Gas Velocity (ft/sec)	20.2	20.2	20.2	0.01	4
Inlet Gas Temperature (F)	341	342	340	1	4
Outlet Gas Temperature (F)	127	127	127	0	4
SO2 Absorbed (mmole/L)	6.19	6.23	6.16	0.03	4
Solids Residence Time (hrs)	6.7	6.7	6.6	0.0	4
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	4
Absorber Pressure Drop (in H2O)	20.68	20.93	20.36	0.21	4
Spray Zone Pressure Drop (in H2O)	5.93	5.97	5.86	0.04	4
VME Pressure Drop (in H2O)	0.93	0.94	0.91	0.01	4
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	4
NYSEG Load (MW)	674	690	640	20	4

PHV-285 Process Summary Report
11/25/95 21:00:00 to 11/26/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	82.0	82.3	81.6	0.3	3
SO2 Removal (NTU)	1.72	1.73	1.69	0.02	3
L/G Ratio (gal/macf)	82	82	82	0	3
Reaction Tank pH	5.57	5.59	5.55	0.02	3
Absorber pH	5.98	6.03	5.93	0.04	3
Flue Gas Flow Rate (scfm)	17402	17405	17399	2	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	10.50	10.50	10.50	0.00	3
Reagent Feed to FLRT (gpm)	2.00	2.00	2.00	0.00	3
Facility Inlet SO2 Conc. (ppm)	1584	1593	1575	7	3
Inlet SO2 Concentration (ppm)	1999	2003	1994	4	3
Outlet SO2 Concentration (ppm)	336	345	330	6	3
Inlet O2 Concentration (%)	6.22	6.29	6.19	0.05	3
Outlet O2 Concentration (%)	5.71	5.76	5.67	0.04	3
Absorber Gas Velocity (ft/sec)	17.6	17.7	17.6	0.03	3
Inlet Gas Temperature (F)	328	332	323	4	3
Outlet Gas Temperature (F)	125	126	124	0	3
SO2 Absorbed (mmole/L)	5.31	5.32	5.30	0.01	3
Solids Residence Time (hrs)	7.8	7.8	7.8	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	15.31	15.39	15.24	0.06	3
Spray Zone Pressure Drop (in H2O)	4.29	4.31	4.26	0.02	3
VME Pressure Drop (in H2O)	0.52	0.53	0.52	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	678	700	662	16	3

PHV-286 Process Summary Report
11/26/95 01:00:00 to 11/26/95 04:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	86.0	86.2	85.9	0.1	3
SO2 Removal (NTU)	1.97	1.98	1.96	0.01	3
L/G Ratio (gal/macf)	143	143	143	0	3
Reaction Tank pH	5.67	5.67	5.66	0.00	3
Absorber pH	6.07	6.07	6.05	0.01	3
Flue Gas Flow Rate (scfm)	10001	10005	9998	3	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	400	400	400	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.06	9.00	4.00	2.14	3
Reagent Feed to FLRT (gpm)	1.21	1.22	1.21	0.00	3
Facility Inlet SO2 Conc. (ppm)	1524	1540	1501	17	3
Inlet SO2 Concentration (ppm)	2000	2001	1997	2	3
Outlet SO2 Concentration (ppm)	263	266	260	2	3
Inlet O2 Concentration (%)	7.43	7.58	7.30	0.11	3
Outlet O2 Concentration (%)	6.92	7.06	6.79	0.11	3
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.1	0.01	3
Inlet Gas Temperature (F)	295	295	294	1	3
Outlet Gas Temperature (F)	121	121	120	0	3
SO2 Absorbed (mmole/L)	3.20	3.21	3.20	0.01	3
Solids Residence Time (hrs)	12.9	12.9	12.9	0.0	3
Slurry Residence Time (min)	3.36	3.36	3.36	0.00	3
Absorber Pressure Drop (in H2O)	4.78	4.79	4.77	0.01	3
Spray Zone Pressure Drop (in H2O)	1.98	1.98	1.97	0.00	3
VME Pressure Drop (in H2O)	0.15	0.15	0.14	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	440	440	0	3
NYSEG Load (MW)	651	685	607	33	3

PHV-287 Process Summary Report
11/26/95 05:00:00 to 11/26/95 06:30:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	76.3	77.4	75.4	0.6	18
SO2 Removal (NTU)	1.44	1.49	1.40	0.02	18
L/G Ratio (gal/macf)	110	110	109	0	18
Reaction Tank pH	5.65	5.70	5.63	0.02	18
Absorber pH	4.47	4.59	4.36	0.07	18
Flue Gas Flow Rate (scfm)	9999	10018	9969	12	18
Header 1 Flow (gpm)	650	650	650	0	18
Header 3 Flow (gpm)	650	650	650	0	18
Header 5 Flow (gpm)	0	0	0	0	18
Blowdown to Sump Rate (gpm)	0.61	1.79	0.07	0.74	18
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	5.59	9.00	4.99	1.29	18
Reagent Feed to FLRT (gpm)	1.03	1.06	1.02	0.01	18
Facility Inlet SO2 Conc. (ppm)	1506	1569	1393	47	18
Inlet SO2 Concentration (ppm)	2002	2042	1985	14	18
Outlet SO2 Concentration (ppm)	448	463	429	10	18
Inlet O2 Concentration (%)	7.51	8.42	7.04	0.40	18
Outlet O2 Concentration (%)	7.01	7.90	6.61	0.39	18
Absorber Gas Velocity (ft/sec)	10.1	10.1	10.0	0.02	18
Inlet Gas Temperature (F)	293	294	290	1	18
Outlet Gas Temperature (F)	120	121	119	1	18
SO2 Absorbed (mmole/L)	7.35	7.53	7.24	0.08	18
Solids Residence Time (hrs)	14.5	14.8	14.2	0.2	18
Slurry Residence Time (min)	8.68	8.69	8.68	0.00	18
Absorber Pressure Drop (in H2O)	4.14	4.19	4.11	0.03	18
Spray Zone Pressure Drop (in H2O)	1.44	1.45	1.42	0.01	18
VME Pressure Drop (in H2O)	0.15	0.22	0.14	0.02	18
Oxidation Air to Rxn Tank (acfm)	440	448	437	2	18
NYSEG Load (MW)	622	678	559	32	18

PHV-288 Process Summary Report
11/26/95 14:00:00 to 11/26/95 17:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	60.9	61.3	60.5	0.3	3
SO2 Removal (NTU)	0.94	0.95	0.93	0.01	3
L/G Ratio (gal/macf)	73	73	73	0	3
Reaction Tank pH	5.58	5.59	5.56	0.01	3
Absorber pH	4.73	4.75	4.69	0.02	3
Flue Gas Flow Rate (scfm)	14887	14899	14866	15	3
Header 1 Flow (gpm)	650	650	650	0	3
Header 3 Flow (gpm)	650	650	650	0	3
Header 5 Flow (gpm)	0	0	0	0	3
Blowdown to Sump Rate (gpm)	0.61	0.61	0.61	0.00	3
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	6.03	6.10	6.00	0.05	3
Reagent Feed to FLRT (gpm)	1.25	1.25	1.25	0.00	3
Facility Inlet SO2 Conc. (ppm)	1711	1727	1688	17	3
Inlet SO2 Concentration (ppm)	2000	2002	1999	1	3
Outlet SO2 Concentration (ppm)	735	741	727	6	3
Inlet O2 Concentration (%)	6.48	6.63	6.40	0.11	3
Outlet O2 Concentration (%)	5.96	6.12	5.89	0.11	3
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.0	0.02	3
Inlet Gas Temperature (F)	315	316	314	1	3
Outlet Gas Temperature (F)	124	124	124	0	3
SO2 Absorbed (mmole/L)	4.41	4.43	4.39	0.02	3
Solids Residence Time (hrs)	12.5	12.5	12.4	0.0	3
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	3
Absorber Pressure Drop (in H2O)	8.84	8.99	8.70	0.12	3
Spray Zone Pressure Drop (in H2O)	2.07	2.08	2.06	0.01	3
VME Pressure Drop (in H2O)	0.33	0.33	0.33	0.00	3
Oxidation Air to Rxn Tank (acfm)	440	441	439	0	3
NYSEG Load (MW)	679	696	663	13	3

PHV-289 Process Summary Report
11/26/95 22:00:00 to 11/27/95 00:00:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	79.2	80.2	78.6	0.4	24
SO2 Removal (NTU)	1.57	1.62	1.54	0.02	24
L/G Ratio (gal/macf)	110	111	105	1	24
Reaction Tank pH	5.94	5.96	5.92	0.01	24
Absorber pH	5.23	5.40	5.08	0.08	24
Flue Gas Flow Rate (scfm)	10002	10028	9982	9	24
Header 1 Flow (gpm)	650	650	650	0	24
Header 3 Flow (gpm)	647	650	582	14	24
Header 5 Flow (gpm)	0	0	0	0	24
Blowdown to Sump Rate (gpm)	0.61	1.80	0.07	0.64	24
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	4.97	5.50	4.50	0.49	24
Reagent Feed to FLRT (gpm)	1.20	1.21	1.18	0.01	24
Facility Inlet SO2 Conc. (ppm)	1601	1693	1505	52	24
Inlet SO2 Concentration (ppm)	2000	2027	1967	12	24
Outlet SO2 Concentration (ppm)	393	404	380	7	24
Inlet O2 Concentration (%)	8.18	8.88	7.71	0.33	24
Outlet O2 Concentration (%)	7.66	8.32	7.15	0.32	24
Absorber Gas Velocity (ft/sec)	10.0	10.1	10.0	0.02	24
Inlet Gas Temperature (F)	285	289	283	2	24
Outlet Gas Temperature (F)	120	121	116	1	24
SO2 Absorbed (mmole/L)	3.87	4.17	3.79	0.07	24
Solids Residence Time (hrs)	14.0	14.3	13.7	0.1	24
Slurry Residence Time (min)	4.40	4.64	4.39	0.05	24
Absorber Pressure Drop (in H2O)	4.46	4.52	4.26	0.06	24
Spray Zone Pressure Drop (in H2O)	1.41	1.44	1.39	0.01	24
VME Pressure Drop (in H2O)	0.14	0.20	0.14	0.01	24
Oxidation Air to Rxn Tank (acfm)	440	449	435	2	24
NYSEG Load (MW)	645	699	567	38	24

PHV-290 Process Summary Report
11/27/95 01:30:00 to 11/27/95 02:30:00

Process Variable	Average	Max	Min	Std.Dev.	Points
SO2 Removal (%)	63.0	63.7	61.2	0.7	12
SO2 Removal (NTU)	1.00	1.01	0.95	0.02	12
L/G Ratio (gal/macf)	73	73	73	0	12
Reaction Tank pH	5.67	5.72	5.62	0.04	12
Absorber pH	5.21	5.34	5.14	0.06	12
Flue Gas Flow Rate (scfm)	14902	14910	14897	3	12
Header 1 Flow (gpm)	650	650	650	0	12
Header 3 Flow (gpm)	650	650	650	0	12
Header 5 Flow (gpm)	0	0	0	0	12
Blowdown to Sump Rate (gpm)	0.61	1.80	0.07	0.64	12
Vacuum Belt Feed Rate	-	-	-	-	-
Centrifuge Feed Rate (gpm)	8.68	9.01	8.00	0.46	12
Reagent Feed to FLRT (gpm)	1.18	1.19	1.17	0.01	12
Facility Inlet SO2 Conc. (ppm)	1695	1705	1678	8	12
Inlet SO2 Concentration (ppm)	1995	2007	1933	19	12
Outlet SO2 Concentration (ppm)	692	704	682	7	12
Inlet O2 Concentration (%)	6.52	6.62	6.46	0.04	12
Outlet O2 Concentration (%)	6.01	6.10	5.95	0.04	12
Absorber Gas Velocity (ft/sec)	15.1	15.1	15.1	0.01	12
Inlet Gas Temperature (F)	315	315	314	0	12
Outlet Gas Temperature (F)	124	125	123	0	12
SO2 Absorbed (mmole/L)	4.56	4.62	4.29	0.09	12
Solids Residence Time (hrs)	12.0	12.7	11.8	0.2	12
Slurry Residence Time (min)	4.39	4.39	4.39	0.00	12
Absorber Pressure Drop (in H2O)	9.07	9.15	8.95	0.06	12
Spray Zone Pressure Drop (in H2O)	2.04	2.07	2.02	0.02	12
VME Pressure Drop (in H2O)	0.33	0.36	0.33	0.01	12
Oxidation Air to Rxn Tank (acfm)	441	450	438	3	12
NYSEG Load (MW)	686	687	684	1	12

APPENDIX C
PILOT HIGH VELOCITY ANALYTICAL SUMMARY

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>Baseline, 20 ft/s, 1700 gpm</i>																						
PHV-200X*	Tue 10/24	12:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X*	Wed 10/25	07:19	3.92	3.15	136.26	131.39	13.93	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-200X	Wed 10/25	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Wed 10/25	14:00	4.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Thu 10/26	07:40	4.36	3.13	131.09	123.32	14.19	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
Averages			4.32	3.13	131.09	123.32	14.19	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Baseline, 10 ft/s, 650 gpm</i>																						
PHV-211X	Thu 10/26	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211X	Thu 10/26	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/s, 1300 gpm</i>																						
PHV-204*	Thu 10/26	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	14:10	4.24	3.20	154.19	132.50	15.81	40.17	23.89	0.00	20.08	506.28	2.35	0.00	16.50	-	-	-	-	0.00	1.00	0.00
PHV-204*	Thu 10/26	15:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	16:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	17:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/s, 1300 gpm</i>																						
PHV-205	Thu 10/26	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205	Fri 10/27	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 15 ft/s, 1300 gpm</i>																						
PHV-206	Fri 10/27	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-206	Fri 10/27	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 10 ft/s, 1300 gpm</i>																						
PHV-207	Fri 10/27	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-207	Fri 10/27	07:59	5.34	4.75	142.23	119.63	14.42	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-207	Fri 10/27	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.34	4.75	142.23	119.63	14.42	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/s, 1300 gpm</i>																						
PHV-205R	Fri 10/27	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	11:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions
 * = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L=Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>Baseline, 10 ft/s, 1700 gpm</i>																						
PHV-203*	Fri 10/27	14:06	5.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-203*	Fri 10/27	15:55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-203	Fri 10/27	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-203	Fri 10/27	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-203	Fri 10/27	18:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-203	Fri 10/27	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 15 ft/s, 1700 gpm</i>																						
PHV-202	Fri 10/27	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-202	Sat 10/28	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/s, 1700 gpm</i>																						
PHV-201	Sat 10/28	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-201	Sat 10/28	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/s, 1700 gpm</i>																						
PHV-200	Sat 10/28	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200	Sat 10/28	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200	Sat 10/28	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/s, 1700 gpm</i>																						
PHV-201R	Sat 10/28	08:25	5.74	4.78	141.98	115.57	14.93	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-201R	Sat 10/28	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-201R	Sat 10/28	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-201R	Sat 10/28	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.74	4.78	141.98	115.57	14.93	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/s, 650 gpm</i>																						
PHV-209	Sat 10/28	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-209	Sat 10/28	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/s, 650 gpm</i>																						
PHV-208	Sat 10/28	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208	Sat 10/28	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 15 ft/s, 650 gpm</i>																						
PHV-210	Sat 10/28	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210	Sun 10/29	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 10 ft/s, 650 gpm</i>																						
PHV-211	Sun 10/29	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211	Sun 10/29	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/s, 650 gpm</i>																						
PHV-208R	Sun 10/29	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
PHV-208R	Sun 10/29	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Averages		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Carryover, Munters, 15 fps, 1700</i>																						
PHV-214*	Sun 10/29	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	10:45	5.24	-	138.78	115.61	16.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	13:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	08:00	5.80	4.96	140.53	112.73	16.74	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	09:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Averages		5.80	4.96	140.53	112.73	16.74	-	-	-	-	-	-	0.03	-	-	-	-	-	-	-	-
<i>Carryover, M, 17.5 fps, 1700</i>																						
PHV-213*	Mon 10/30	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:55	5.61	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	15:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	06:30	5.77	-	141.17	109.39	17.31	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	12:00	-	-	-	-	-	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
	Averages		5.77	-	141.17	109.39	17.31	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Carryover, M, 20 fps, 1700 gpm</i>																						
PHV-212*	Tue 10/31	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212*	Tue 10/31	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Tue 10/31	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	07:40	5.57	4.53	136.79	101.48	17.42	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
	Averages		5.57	4.53	136.79	101.48	17.42	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Carryover, M, 20 fps, 1300 gpm</i>																						
PHV-215*	Wed 11/01	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	14:00	5.48	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
PHV-215*	Wed 11/01	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	07:20	5.22	4.33	132.14	96.80	17.43	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.22	4.33	132.14	96.80	17.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 13.5 ft/sec, 1300 gpm</i>																						
PHV-264	Thu 11/02	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-264	Thu 11/02	13:40	4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			4.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 10 ft/sec, 650 gpm</i>																						
PHV-211R	Thu 11/02	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 15 ft/sec, 650 gpm</i>																						
PHV-210R	Thu 11/02	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210R	Fri 11/03	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 11.5 ft/sec, 1300 gpm</i>																						
PHV-265	Fri 11/03	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265	Fri 11/03	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/sec, 650 gpm</i>																						
PHV-208RR*	Fri 11/03	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR*	Fri 11/03	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	09:00	4.66	3.94	145.18	95.54	20.38	38.79	23.15	0.13	24.73	432.94	2.76	0.00	15.03	-	-	-	-	0.00	0.97	0.00
PHV-208RR	Fri 11/03	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	10:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			4.66	3.94	145.18	95.54	20.38	38.79	23.15	0.13	24.73	432.94	2.76	0.00	15.03	-	-	-	-	0.00	0.97	0.00

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

Pilot FLRT Liquid Analytical Summary: PHV Phase II Test Block

Test	Date	Time	FLRT	ABS	pH	pH	L-Ca++	L-Mg++	L-Na+	L-K+	L=Al	L-Fe	L-Mn	L-Cl-	L-CO3	L-SO3=	L-SO4=	DBA	Adipic	Glutaric	Succinic	CaSO3	CaSO4	CaCO3	
Baseline, 15 fl/sec, 650 gpm	PHV-210RR* F# 11/03	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	PHV-210RR* F# 11/03	14:00	4.97	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	PHV-210RR* F# 11/03	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	PHV-210RR* F# 11/03	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	PHV-210RR* F# 11/03	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	PHV-210RR F# 11/03	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	PHV-210RR F# 11/03	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	Averages																								
	Baseline, 15 fl/sec, 1300 gpm																								
	PHV-206R F# 11/03	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-206R Sat 11/04	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages																									
Baseline, 11.5 fl/sec, 1300 gpm																									
PHV-265R Sat 11/04	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-265R Sat 11/04	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-265R Sat 11/04	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages																									
Baseline, 20 fl/sec, 1300 gpm																									
PHV-204R Sat 11/04	07:22	5.16	4.32	136.23	77.52	17.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-204R Sat 11/04	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-204R Sat 11/04	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-204R Sat 11/04	11:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages																									
Baseline, 17.5 fl/sec, 1300 gpm																									
PHV-205RR Sat 11/04	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR Sat 11/04	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR Sat 11/04	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR Sat 11/04	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR* Sat 11/04	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR* Sun 11/05	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR* Sun 11/05	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR* Sun 11/05	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-205RR* Sun 11/05	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages																									

X = Data Collected During Startup Conditions
* = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>DBA, 10 fl/sec, 650 gpm</i>																						
PHV-221*	Sun 11/05	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	10:10	4.27	4.21	157.78	79.55	17.44	-	-	-	-	-	-	-	-	6039	5.76	30.92	9.46	-	-	-
PHV-221*	Sun 11/05	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	5660	5.49	28.96	8.78	-	-	-
PHV-221*	Sun 11/05	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	07:10	5.30	5.09	159.18	74.42	16.10	-	-	-	-	-	-	0.35	-	5442	5.21	27.66	8.73	-	-	-
PHV-221	Mon 11/06	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	10:50	-	-	-	-	-	-	-	-	-	-	-	-	-	5571	5.24	28.28	9.09	-	-	-
PHV-221	Mon 11/06	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.30	5.09	159.18	74.42	16.10	-	-	-	-	-	-	0.35	-	5506	5.23	27.97	8.91	-	-	-
<i>DBA, 15 fl/sec, 650 gpm</i>																						
PHV-220*	Mon 11/06	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	15:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	16:50	-	-	-	-	-	-	-	-	-	-	-	-	-	5519	5.46	27.03	9.78	-	-	-
PHV-220	Mon 11/06	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	5519	5.46	27.03	9.78	-	-	-
<i>DBA, 20 fl/sec, 650 gpm</i>																						
PHV-218	Mon 11/06	17:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218	Mon 11/06	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218	Mon 11/06	19:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	5263	5.08	25.77	9.49	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	5263	5.08	25.77	9.49	-	-	-
<i>DBA, Tan., 10 fl/sec, 650 gpm</i>																						
PHV-266*	Thu 11/09	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266*	Thu 11/09	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	06:30	5.38	5.19	178.11	89.76	18.32	-	-	-	-	-	-	0.05	-	5307	4.68	24.64	11.62	-	-	-
PHV-266	Thu 11/09	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.38	5.19	178.11	89.76	18.32	-	-	-	-	-	-	0.05	-	5307	4.68	24.64	11.62	-	-	-

DBA, Tan., 15 fl/sec, 650 gpm
 X = Data Collected During Startup Conditions
 * = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
PHV-267	Thu 11/09	14:00	5.05	-	149.33	75.10	15.35	-	-	-	-	-	-	-	-	5755	4.64	27.34	12.45	-	-	-
PHV-267	Thu 11/09	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.05	-	149.33	75.10	15.35	-	-	-	-	-	-	-	-	5755	4.64	27.34	12.45	-	-	-
<i>DBA, Tan., 20 ft/sec, 650 gpm</i>																						
PHV-268	Thu 11/09	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268	Thu 11/09	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>DBA, Tan., 17.5 ft/sec, 650 gpm</i>																						
PHV-269	Thu 11/09	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-269	Fri 11/10	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>DBA, Tan., 20 ft/sec, 1300 gpm</i>																						
PHV-270	Fri 11/10	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-270	Fri 11/10	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>DBA, Tan., 20 ft/sec, 1700 gpm</i>																						
PHV-271	Fri 11/10	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-271	Fri 11/10	07:55	4.90	4.88	144.56	70.39	14.02	26.22	8.14	0.00	48.94	270.47	4.58	2.04	17.43	5461	4.24	26.42	11.48	1.09	1.16	0.01
PHV-271	Fri 11/10	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			4.90	4.88	144.56	70.39	14.02	26.22	8.14	0.00	48.94	270.47	4.58	2.04	17.43	5461	4.24	26.42	11.48	1.09	1.16	0.01
<i>DBA, Tan., 20 ft/sec, 650 gpm</i>																						
PHV-268R	Fri 11/10	09:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268R	Fri 11/10	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268R	Fri 11/10	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>DBA, Tan., 15 ft/sec, 650 gpm</i>																						
PHV-267R	Fri 11/10	13:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	16:07	-	-	-	-	-	-	-	-	-	-	-	-	-	5303	4.69	24.25	12.01	-	-	-
PHV-267R	Fri 11/10	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	5303	4.69	24.25	12.01	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>Tan., 17.5 ft/sec, 1300 gpm</i>																						
PHV-245*	Sat 11/11	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	08:05	5.50	4.55	212.03	118.08	22.52	-	-	-	-	-	-	0.11	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	11:15	-	4.28	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 20 ft/sec, 1300 gpm</i>																						
PHV-244	Sat 11/11	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244	Sun 11/12	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 15 ft/sec, 1300 gpm</i>																						
PHV-246	Sun 11/12	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246	Sun 11/12	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 10 ft/sec, 1300 gpm</i>																						
PHV-247	Sun 11/12	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247	Sun 11/12	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 17.5 ft/sec, 1300 gpm</i>																						
PHV-245R	Sun 11/12	10:23	5.32	4.12	198.06	125.79	23.85	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-245R	Sun 11/12	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.32	4.12	198.06	125.79	23.85	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Tan., 17.5 ft/sec, 650 gpm</i>																						
PHV-249	Sun 11/12	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249	Sun 11/12	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249	Sun 11/12	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 20 ft/sec, 650 gpm</i>																						
PHV-248	Sun 11/12	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248	Sun 11/12	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 15 ft/sec, 650 gpm</i>																						
PHV-250	Sun 11/12	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-250	Mon 11/13	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

November 1995

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>Tan., 10 μsec, 650 gpm</i>																						
PHV-251	Mon 11/13	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-251	Mon 11/13	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 20 μsec, 650 gpm</i>																						
PHV-248R	Mon 11/13	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248R	Mon 11/13	06:40	5.88	4.86	180.63	111.00	21.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248R	Mon 11/13	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.88	4.86	180.63	111.00	21.26	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Tan., 20 μsec, 1700 gpm</i>																						
PHV-240	Mon 11/13	09:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240	Mon 11/13	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240	Mon 11/13	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240	Mon 11/13	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 17.5 μsec, 1700 gpm</i>																						
PHV-241	Mon 11/13	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-241	Mon 11/13	13:50	5.55	-	157.38	98.83	19.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-241	Mon 11/13	14:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-241	Mon 11/13	16:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.55	-	157.38	98.83	19.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 15 μsec, 1700 gpm</i>																						
PHV-242	Mon 11/13	16:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-242	Mon 11/13	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-242	Mon 11/13	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 10 μsec, 1700 gpm</i>																						
PHV-243	Mon 11/13	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-243	Tue 11/14	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 20 μsec, 1700 gpm</i>																						
PHV-240R	Tue 11/14	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240R	Tue 11/14	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 20 μsec, 1300 gpm</i>																						
PHV-244R	Tue 11/14	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244R	Tue 11/14	07:50	5.66	4.89	139.56	85.97	15.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244R	Tue 11/14	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.66	4.89	139.56	85.97	15.59	-	-	-	-	-	-	0.22	-	-	-	-	-	-	-	-
														0.22	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions
* = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>Tan., 15 ft/sec, 1300 gpm</i>																						
PHV-246R	Tue 11/14	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246R	Tue 11/14	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246R	Tue 11/14	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 10 ft/sec, 1300 gpm</i>																						
PHV-247R*	Tue 11/14	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	13:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	15:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 17.5 ft/sec, 650 gpm</i>																						
PHV-249R	Tue 11/14	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249R	Tue 11/14	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249R	Tue 11/14	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 15 ft/sec, 650 gpm</i>																						
PHV-250R	Tue 11/14	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-250R	Wed 11/15	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Tan., 17.5 ft/sec, 1300 gpm</i>																						
PHV-245RR	Wed 11/15	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245RR	Wed 11/15	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Carryover, 15 ft/s, 1700 gpm</i>																						
PHV-224	Thu 11/16	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	08:00	5.90	5.04	112.03	76.54	15.14	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	14:15	-	-	135.19	79.87	17.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	16:50	-	-	135.07	80.93	18.04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.90	5.04	127.43	79.11	16.99	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Carryover, 17.5 ft/s, 1700 gpm</i>																						
PHV-223*	Thu 11/16	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	08:25	5.62	5.05	135.46	86.37	19.38	24.97	0.74	0.00	25.18	403.93	2.65	0.07	15.14	-	-	-	-	-	-	-
PHV-223	Fri 11/17	11:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	14:09	5.74	-	139.16	90.87	20.93	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.68	5.05	137.31	88.62	20.16	24.97	0.74	0.00	25.18	403.93	2.65	0.07	15.14	-	-	-	-	-	-	-
<i>Carryover, 20 ft/s, 1700 gpm</i>																						
PHV-222	Fri 11/17	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X = Data Collected During Startup Conditions																						
* = Data Not Included in Averages																						

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
PHV-222	Sat 11/18	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	07:40	5.58	4.62	141.84	92.24	20.90	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	10:30	-	-	140.22	91.80	21.12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.58	4.62	141.03	92.02	21.01	-	-	-	-	-	-	0.00	-	-	-	-	-	-	-	-
<i>Carryover, 20 ft/s, 1300 gpm</i>																						
PHV-225	Sat 11/18	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	11:12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	12:00	-	-	145.58	96.37	21.96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	14:00	-	-	146.02	94.90	21.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	145.80	95.64	21.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Carryover, 15 ft/s, 1700 gpm</i>																						
PHV-224R	Sun 11/19	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	08:00	-	-	143.71	93.65	21.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	10:30	-	-	139.97	96.04	22.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	141.84	94.85	21.88	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 15 ft/sec, 1300 gpm</i>																						
PHV-272	Mon 11/20	13:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/sec, 1300 gpm</i>																						
PHV-273	Mon 11/20	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273	Mon 11/20	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273*	Mon 11/20	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/sec, 1300 gpm</i>																						
PHV-274	Mon 11/20	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-274	Tue 11/21	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block

Test	Date	Time	FLRT	pH	ABS	L-Ca++	L-Mg++	L-Na+	L-K+	L-Al	L-Fe	L-Mn	L-Cl-	L-CO ₃	L-SO ₃	L-SO ₄	DBA	Adipic	Glutaric	Succinic	CaSO ₃	CaSO ₄	CaCO ₃	RS
Baseline, 11.5 f/sec, 1300 gpm	PHV-275*	Tue 11/21	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-275*	Tue 11/21	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-275*	Tue 11/21	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 f/sec, 1300 gpm	PHV-276	Tue 11/21	07:15	5.85	5.21	141.25	97.55	21.88	-	-	-	-	-	-	-	0.06	-	-	-	-	-	-	-	-
	PHV-276*	Tue 11/21	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				5.85	5.21	141.25	97.55	21.88	-	-	-	-	-	-	-	0.06	-	-	-	-	-	-	-	-
VLP, 20 f/sec, 1300 gpm	PHV-232*	Tue 11/21	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-232*	Tue 11/21	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-232*	Tue 11/21	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-232*	Tue 11/21	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 f/sec, 1300 gpm	PHV-233	Tue 11/21	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-233	Wed 11/22	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 f/sec, 1300 gpm	PHV-234	Wed 11/22	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-234	Wed 11/22	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 f/sec, 1300 gpm	PHV-235	Wed 11/22	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-235	Wed 11/22	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 f/sec, 1300 gpm	PHV-233R*	Wed 11/22	08:50	5.74	4.85	135.94	95.45	21.24	31.81	0.64	0.00	45.04	-	-	-	0.00	-	-	-	-	-	-	-	-
	PHV-233R	Wed 11/22	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-233R	Wed 11/22	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-233R	Wed 11/22	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 f/sec, 650 gpm	PHV-238	Wed 11/22	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-238	Wed 11/22	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-238	Wed 11/22	15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	PHV-238	Wed 11/22	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions
* = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>VLP, 20 ft/sec, 650 gpm</i>																						
PHV-236	Wed 11/22	17:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236	Wed 11/22	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236	Wed 11/22	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 17.5 ft/sec, 650 gpm</i>																						
PHV-237	Wed 11/22	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-237	Thu 11/23	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 650 gpm</i>																						
PHV-239	Thu 11/23	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-239	Thu 11/23	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 650 gpm</i>																						
PHV-236R	Thu 11/23	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236R	Thu 11/23	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1700 gpm</i>																						
PHV-228	Thu 11/23	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-228	Thu 11/23	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 17.5 ft/sec, 1700 gpm</i>																						
PHV-229	Thu 11/23	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-229	Thu 11/23	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1700 gpm</i>																						
PHV-230	Thu 11/23	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-230	Thu 11/23	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1700 gpm</i>																						
PHV-231	Thu 11/23	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-231	Fri 11/24	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1700 gpm</i>																						
PHV-228R	Fri 11/24	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-228R	Fri 11/24	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																						
PHV-277	Fri 11/24	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-277	Fri 11/24	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-277	Fri 11/24	08:03	5.91	5.38	138.74	82.99	20.26	-	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-
Averages			5.91	5.38	138.74	82.99	20.26	-	-	-	-	-	-	0.08	-	-	-	-	-	-	-	-

VLP, 10 ft/sec, 1300 gpm
X = Data Collected During Startup Conditions

• = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
PHV-278	Fri 11/24	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-278	Fri 11/24	10:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-278	Fri 11/24	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1300 gpm</i>																						
PHV-279*	Fri 11/24	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279*	Fri 11/24	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279	Fri 11/24	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279	Fri 11/24	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																						
PHV-280	Fri 11/24	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-280*	Sat 11/25	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1300 gpm</i>																						
PHV-281	Sat 11/25	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-281	Sat 11/25	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1700 gpm</i>																						
PHV-282	Sat 11/25	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-282	Sat 11/25	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1700 gpm</i>																						
PHV-283*	Sat 11/25	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-283	Sat 11/25	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-283	Sat 11/25	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1700 gpm</i>																						
PHV-284*	Sat 11/25	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284*	Sat 11/25	14:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 17.5 ft/sec, 1700 gpm</i>																						
PHV-285	Sat 11/25	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-285	Sun 11/26	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions
 * = Data Not Included in Averages

**Pilot FLRT Liquid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT pH	ABS pH	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-K+ (ppm)	L-Al (ppm)	L-Fe (ppm)	L-Mn (ppm)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	ICE DBA (ppm)	ICE Adipic (mM)	ICE Glutaric (mM)	ICE Succinic (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS
<i>VLP, 10 ft/sec, 1700 gpm</i>																						
PHV-286	Sun 11/26	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-286	Sun 11/26	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1300 gpm</i>																						
PHV-287	Sun 11/26	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-287*	Sun 11/26	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																						
PHV-288*	Sun 11/26	10:00	5.52	4.52	147.70	82.11	19.17	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288*	Sun 11/26	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288	Sun 11/26	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288	Sun 11/26	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1300 gpm</i>																						
PHV-289*	Sun 11/26	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289*	Sun 11/26	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289	Sun 11/26	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289	Mon 11/27	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																						
PHV-290	Mon 11/27	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-290*	Mon 11/27	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
															VME Carryover			
Test	Date	Time	Wash pH	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
Baseline, 20 ft/s, 1700 gpm																		
PHV-200X*	Tue 10/24	12:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X*	Wed 10/25	07:19	6.19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Wed 10/25	13:45	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Wed 10/25	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Thu 10/26	07:40	6.43	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			3.22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/s, 650 gpm																		
PHV-211X	Thu 10/26	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211X	Thu 10/26	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 20 ft/s, 1300 gpm																		
PHV-204*	Thu 10/26	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	14:10	6.60	0.01	36.69	31.52	4.52	110.93	-	0.00	7.22	-	-	-	0.04	85.40	78.67	9.08
PHV-204*	Thu 10/26	15:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	16:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	17:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 17.5 ft/s, 1300 gpm																		
PHV-205	Thu 10/26	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205	Fri 10/27	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 15 ft/s, 1300 gpm																		
PHV-206	Fri 10/27	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-206	Fri 10/27	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/s, 1300 gpm																		
PHV-207	Fri 10/27	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-207	Fri 10/27	07:59	6.58	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-207	Fri 10/27	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	61.65	55.91	6.49
Averages			6.58	-	-	-	-	-	-	-	-	-	-	-	-	61.65	55.91	6.49
Baseline, 17.5 ft/s, 1300 gpm																		
PHV-205R	Fri 10/27	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	11:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

PHV Phase II Test Block

X = Data Collected During Startup Conditions
PHV-208R Sun 10/29 06:00
Measurement of 1000 rpm
* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time												VME Carryover	HME Collection			
			Wash pH	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
PHV-208R	Sun 10/29	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carryover, Muniers, 15 fps, 1700																		
PHV-214*	Sun 10/29	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	13:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	08:00	7.00	-	66.14	50.21	7.56	-	-	-	-	-	-	-	0.00	13.80	11.54	1.53
PHV-214	Mon 10/30	09:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			7.00	-	66.14	50.21	7.56	-	-	-	-	-	-	-	0.00	13.80	11.54	1.53
Carryover, M, 17.5 fps, 1700																		
PHV-213*	Mon 10/30	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	15:40	7.01	-	66.40	52.53	8.08	-	-	-	-	-	-	-	-	20.21	11.64	1.69
PHV-213	Mon 10/30	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	06:30	7.01	0.01	68.88	50.28	7.97	-	-	-	-	-	-	-	0.00	20.92	13.98	2.25
PHV-213	Tue 10/31	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			7.01	0.01	68.88	50.28	7.97	-	-	-	-	-	-	-	0.00	20.92	13.98	2.25
Carryover, M, 20 fps, 1700 gpm																		
PHV-212*	Tue 10/31	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212*	Tue 10/31	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Tue 10/31	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	07:40	6.90	0.02	69.11	45.20	8.14	-	-	-	-	-	-	-	0.08	83.02	62.38	10.43
Averages			6.90	0.02	69.11	45.20	8.14	-	-	-	-	-	-	-	0.08	83.02	62.38	10.43
Carryover, M, 20 fps, 1300 gpm																		
PHV-215*	Wed 11/01	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X = Data Collected During Startup Conditions																		
* = Data Not Included in Averages																		

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
PHV-215*	Wed 11/01	15:45	-	-	64.91	46.96	7.81	-	-	-	-	-	-	-	-	86.58	71.00	11.61
PHV-215*	Wed 11/01	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	07:20	6.60	-	64.91	44.38	8.14	-	-	-	-	-	-	-	3.25	78.44	66.13	11.80
PHV-215	Thu 11/02	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			6.60	-	64.91	44.38	8.14	-	-	-	-	-	-	-	3.25	78.44	66.13	11.80
Baseline, 13.5 ft/sec, 1300 gpm																		
PHV-264	Thu 11/02	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-264	Thu 11/02	13:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/sec, 650 gpm																		
PHV-211R	Thu 11/02	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 15 ft/sec, 650 gpm																		
PHV-210R	Thu 11/02	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210R	Fri 11/03	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 11.5 ft/sec, 1300 gpm																		
PHV-265	Fri 11/03	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265	Fri 11/03	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 20 ft/sec, 650 gpm																		
PHV-208RR*	Fri 11/03	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR*	Fri 11/03	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	09:00	6.44	0.01	61.77	37.71	7.95	168.14	1.49	0.00	8.78	0.00	0.51	0.75	0.02	39.60	25.29	5.08
PHV-208RR	Fri 11/03	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	10:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			6.44	0.01	61.77	37.71	7.95	168.14	1.49	0.00	8.78	0.00	0.51	0.75	0.02	39.60	25.29	5.08

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Solids			
Baseline, 15 ft/sec,650 gpm																		
PHV-210RR*	Fri 11/03	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR	Fri 11/03	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR	Fri 11/03	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 15 ft/sec,1300 gpm																		
PHV-206R	Fri 11/03	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-206R	Sat 11/04	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 11.5 ft/sec,1300 gpm																		
PHV-265R	Sat 11/04	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265R	Sat 11/04	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265R	Sat 11/04	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 20ft/sec,1300 gpm																		
PHV-204R	Sat 11/04	07:22	6.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204R	Sat 11/04	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204R	Sat 11/04	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204R	Sat 11/04	11:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			6.59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 17.5ft/sec,1300 gpm																		
PHV-205RR	Sat 11/04	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR	Sat 11/04	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sat 11/04	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sat 11/04	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sat 11/04	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
DBA, 10 ft/sec, 650 gpm																		
PHV-221*	Sun 11/05	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	10:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	07:10	5.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	10:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.57	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, 15 ft/sec, 650 gpm																		
PHV-220*	Mon 11/06	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	15:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	16:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, 20 ft/sec, 650 gpm																		
PHV-218	Mon 11/06	17:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218	Mon 11/06	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218	Mon 11/06	19:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 10 ft/sec, 650 gpm																		
PHV-266*	Thu 11/09	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266*	Thu 11/09	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	08:00	5.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.78	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DBA, Tan., 15 ft/sec, 650 gpm
X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
PHV-267	Thu 11/09	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 20 ft/sec, 650 gpm																		
PHV-268	Thu 11/09	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268	Thu 11/09	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 17.5 ft/sec, 650 gpm																		
PHV-269	Thu 11/09	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-269	Fri 11/10	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 20 ft/sec, 1300 gpm																		
PHV-270	Fri 11/10	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-270	Fri 11/10	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 20 ft/sec, 1700 gpm																		
PHV-271	Fri 11/10	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-271	Fri 11/10	07:55	5.01	0.01	69.49	32.59	7.05	126.45	1.54	0.22	10.98	-	-	-	0.10	100.49	47.93	9.56
PHV-271	Fri 11/10	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			5.01	0.01	69.49	32.59	7.05	126.45	1.54	0.22	10.98	-	-	-	0.10	100.49	47.93	9.56
DBA, Tan., 20 ft/sec, 650 gpm																		
PHV-268R	Fri 11/10	09:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268R	Fri 11/10	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268R	Fri 11/10	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 15 ft/sec, 650 gpm																		
PHV-267R	Fri 11/10	13:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	16:07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
Tan., 17.5 ft/sec, 1300 gpm																		
PHV-245*	Sat 11/11	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	08:05	7.53	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 20 ft/sec, 1300 gpm																		
PHV-244	Sat 11/11	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244	Sun 11/12	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 15 ft/sec, 1300 gpm																		
PHV-246	Sun 11/12	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246	Sun 11/12	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 10 ft/sec, 1300 gpm																		
PHV-247	Sun 11/12	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247	Sun 11/12	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 17.5 ft/sec, 1300 gpm																		
PHV-245R	Sun 11/12	10:23	6.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245R	Sun 11/12	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			6.70	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 17.5 ft/sec, 650 gpm																		
PHV-249	Sun 11/12	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249	Sun 11/12	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249	Sun 11/12	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 20 ft/sec, 650 gpm																		
PHV-248	Sun 11/12	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248	Sun 11/12	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 15 ft/sec, 650 gpm																		
PHV-250	Sun 11/12	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-250	Mon 11/13	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
Tan., 10 ft/sec, 650 gpm																		
PHV-251	Mon 11/13	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-251	Mon 11/13	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 20 ft/sec, 650 gpm																		
PHV-248R	Mon 11/13	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248R	Mon 11/13	06:40	7.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248R	Mon 11/13	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			7.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 20 ft/sec, 1700 gpm																		
PHV-240	Mon 11/13	09:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240	Mon 11/13	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240	Mon 11/13	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240	Mon 11/13	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 17.5 ft/sec, 1700 gpm																		
PHV-241	Mon 11/13	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-241	Mon 11/13	13:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-241	Mon 11/13	14:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-241	Mon 11/13	16:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 15 ft/sec, 1700 gpm																		
PHV-242	Mon 11/13	16:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-242	Mon 11/13	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-242	Mon 11/13	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 10 ft/sec, 1700 gpm																		
PHV-243	Mon 11/13	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-243	Tue 11/14	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 20 ft/sec, 1700 gpm																		
PHV-240R	Tue 11/14	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-240R	Tue 11/14	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 20 ft/sec, 1300 gpm																		
PHV-244R	Tue 11/14	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244R	Tue 11/14	07:50	7.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244R	Tue 11/14	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			7.00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
Tan., 15 ft/sec, 1300 gpm																		
PHV-246R	Tue 11/14	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246R	Tue 11/14	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246R	Tue 11/14	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 10 ft/sec, 1300 gpm																		
PHV-247R*	Tue 11/14	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	13:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	15:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247R	Tue 11/14	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 17.5 ft/sec, 650 gpm																		
PHV-249R	Tue 11/14	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249R	Tue 11/14	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249R	Tue 11/14	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 15 ft/sec, 650 gpm																		
PHV-250R	Tue 11/14	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-250R	Wed 11/15	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tan., 17.5 ft/sec, 1300 gpm																		
PHV-245RR	Wed 11/15	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245RR	Wed 11/15	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carryover, 15 ft/s, 1700 gpm																		
PHV-224	Thu 11/16	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	08:00	7.14	-	56.28	34.94	6.98	-	-	-	-	-	-	-	-	39.14	26.38	5.16
PHV-224	Thu 11/16	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	14:15	-	-	57.02	33.80	7.50	-	-	-	-	-	-	-	-	37.7	21.24	4.63
PHV-224	Thu 11/16	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	16:50	-	-	58.37	34.40	7.87	-	-	-	-	-	-	-	-	42.78	27.16	6.01
Averages			7.14	-	57.22	34.38	7.45	-	-	-	-	-	-	-	-	39.87	24.93	5.27
Carryover, 17.5 ft/s, 1700 gpm																		
PHV-223*	Thu 11/16	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	08:25	7.00	-	62.20	37.50	8.66	-	-	-	-	-	-	-	-	26.37	16.41	3.79
PHV-223	Fri 11/17	11:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	14:09	-	-	63.93	39.76	9.03	-	-	-	-	-	-	-	-	25.59	10.93	2.56
PHV-223	Fri 11/17	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			7.00	-	63.07	38.63	8.85	-	-	-	-	-	-	-	-	25.98	13.67	3.18
Carryover, 20 ft/s, 1700 gpm																		
PHV-222	Fri 11/17	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
X = Data Collected During Startup Conditions																		
* = Data Not Included in Averages																		

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
PHV-222	Sat 11/18	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	07:40	-	-	68.81	43.18	10.07	-	-	-	-	-	-	-	-	106.66	75.55	16.94
PHV-222	Sat 11/18	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	10:30	-	-	66.67	41.06	9.58	-	-	-	-	-	-	-	-	101.98	66.19	15.48
PHV-222	Sat 11/18	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	67.74	42.12	9.83	-	-	-	-	-	-	-	-	104.32	70.87	16.21
Carryover, 20 ft/s, 1300 gpm																		
PHV-225	Sat 11/18	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	11:12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	12:00	-	-	69.99	44.33	10.25	-	-	-	-	-	-	-	-	106.10	71.54	16.25
PHV-225	Sun 11/19	14:00	-	-	66.52	42.22	9.63	-	-	-	-	-	-	-	-	120.63	83.52	18.67
PHV-225	Sun 11/19	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	68.26	43.28	9.94	-	-	-	-	-	-	-	-	113.37	77.53	17.46
Carryover, 15 ft/s, 1700 gpm																		
PHV-224R	Sun 11/19	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	08:00	-	-	67.93	42.41	9.78	-	-	-	-	-	-	-	-	34.15	21.93	4.73
PHV-224R	Mon 11/20	10:30	-	-	64.06	41.45	9.72	-	-	-	-	-	-	-	-	35.24	26.49	5.80
PHV-224R	Mon 11/20	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	66.00	41.93	9.75	-	-	-	-	-	-	-	-	34.70	24.21	5.26
Baseline, 15 ft/sec, 1300 gpm																		
PHV-272	Mon 11/20	13:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 20 ft/sec, 1300 gpm																		
PHV-273	Mon 11/20	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273	Mon 11/20	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273*	Mon 11/20	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 17.5 ft/sec, 1300 gpm																		
PHV-274	Mon 11/20	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-274	Tue 11/21	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
Baseline, 11.5 ft/sec, 1300 gpm																		
PHV-275*	Tue 11/21	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-275*	Tue 11/21	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-275	Tue 11/21	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/sec, 1300 gpm																		
PHV-276	Tue 11/21	07:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-276	Tue 11/21	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-276*	Tue 11/21	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 1300 gpm																		
PHV-232*	Tue 11/21	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-232*	Tue 11/21	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-232	Tue 11/21	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-232*	Tue 11/21	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 ft/sec, 1300 gpm																		
PHV-233	Tue 11/21	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-233	Wed 11/22	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-234	Wed 11/22	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-234	Wed 11/22	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																		
PHV-235	Wed 11/22	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-235	Wed 11/22	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 ft/sec, 1300 gpm																		
PHV-233R*	Wed 11/22	08:50	6.95	0.00	61.20	40.45	9.14	-	-	0.00	-	-	-	-	-	-	-	-
PHV-233R	Wed 11/22	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-233R	Wed 11/22	10:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-233R	Wed 11/22	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 650 gpm																		
PHV-238	Wed 11/22	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-238	Wed 11/22	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-238	Wed 11/22	15:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-238	Wed 11/22	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Wt% Solids			
VLP, 20 ft/sec, 650 gpm																		
PHV-236	Wed 11/22	17:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236	Wed 11/22	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236	Wed 11/22	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 ft/sec, 650 gpm																		
PHV-237	Wed 11/22	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-237	Thu 11/23	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 650 gpm																		
PHV-239	Thu 11/23	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-239	Thu 11/23	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 650 gpm																		
PHV-236R	Thu 11/23	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236R	Thu 11/23	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 1700 gpm																		
PHV-228	Thu 11/23	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-228	Thu 11/23	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 ft/sec, 1700 gpm																		
PHV-229	Thu 11/23	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-229	Thu 11/23	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1700 gpm																		
PHV-230	Thu 11/23	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-230	Thu 11/23	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1700 gpm																		
PHV-231	Thu 11/23	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-231	Fri 11/24	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 1700 gpm																		
PHV-228R	Fri 11/24	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-228R	Fri 11/24	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-277	Fri 11/24	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-277	Fri 11/24	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-277	Fri 11/24	08:03	6.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			6.95	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

VLP, 10 ft/sec, 1300 gpm
X = Data Collected During Startup Conditions

* = Data Not Included in Averages

November 1995

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	VME Wash pH	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	HME Collection (VME Carryover)			
															VME Carryover Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
PHV-278	Fri 11/24	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-278	Fri 11/24	10:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-278	Fri 11/24	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1300 gpm</i>																		
PHV-279*	Fri 11/24	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279*	Fri 11/24	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279	Fri 11/24	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279	Fri 11/24	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																		
PHV-280	Fri 11/24	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-280*	Sat 11/25	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1300 gpm</i>																		
PHV-281	Sat 11/25	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-281	Sat 11/25	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1700 gpm</i>																		
PHV-282	Sat 11/25	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-282	Sat 11/25	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1700 gpm</i>																		
PHV-283*	Sat 11/25	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-283	Sat 11/25	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-283	Sat 11/25	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1700 gpm</i>																		
PHV-284*	Sat 11/25	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284*	Sat 11/25	14:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 17.5 ft/sec, 1700 gpm</i>																		
PHV-285	Sat 11/25	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-285	Sun 11/26	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot VME Wash Water Analytical Summary:
PHV Phase II Test Block**

															HME Collection (VME Carryover)			
Test	Date	Time	VME	Wt% Solids	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)	L-Cl- (mM)	L-CO3= (mM)	L-SO3= (mM)	L-SO4= (mM)	CaSO3 RS	CaSO4 RS	CaCO3 RS	VME	L-Ca++ (mM)	L-Mg++ (mM)	L-Na+ (mM)
			Wash pH												Carryover Solids			
VLP, 10 ft/sec, 1700 gpm																		
PHV-286	Sun 11/26	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-286	Sun 11/26	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																		
PHV-287	Sun 11/26	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-287*	Sun 11/26	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-288*	Sun 11/26	10:00	6.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288*	Sun 11/26	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288	Sun 11/26	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288	Sun 11/26	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																		
PHV-289*	Sun 11/26	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289*	Sun 11/26	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289	Sun 11/26	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289	Mon 11/27	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-290	Mon 11/27	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-290*	Mon 11/27	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT	Ca	Mg	SO3	SO4	CO3	Inerts	Wt	Mol	Solids	Ox.	Util.	IR	Util.	CO3-	L.S.	CPAFC	Thickener	Initial	Final	Form
			Wt%							Solids	Solids						Closure			Closure			
				(mmol/g)	(mmol/g)	(mmol/g)	(mmol/g)	(mmol/g)	(wt%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(g/L)	Wt%	(ft2/tpd)	Wt%	Wt%	lb/hr*sqft	
Baseline, 20 ft/s, 1700 gpm																							
PHV-200X*	Tue 10/24	12:35	7.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-200X*	Wed 10/25	07:19	14.99	-	-	-	-	0.06	-	-	-	-	-	-	-	-	99.0	1.0	83.74	-	-	-	
PHV-200X	Wed 10/25	13:45	13.31	-	-	-	-	0.24	-	-	-	-	-	-	-	-	95.9	3.5	-	-	-	-	
PHV-200X	Wed 10/25	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-200X	Thu 10/26	07:40	10.00	-	-	-	-	0.18	-	-	-	-	-	-	-	-	96.9	1.9	83.96	-	-	-	
Averages			11.66	-	-	-	-	0.21	-	-	-	-	-	-	-	-	96.4	2.72	83.96	-	-	-	
Baseline, 10 ft/s, 650 gpm																							
PHV-211X	Thu 10/26	10:00	9.64	-	-	-	-	0.12	-	-	-	-	-	-	-	-	97.9	1.2	-	-	-	-	
PHV-211X	Thu 10/26	12:00	9.93	-	-	-	-	0.07	-	-	-	-	-	-	-	-	98.8	0.7	-	-	-	-	
Averages			9.79	-	-	-	-	0.10	-	-	-	-	-	-	-	-	98.4	1.0	-	-	-	-	
Baseline, 20 ft/s, 1300 gpm																							
PHV-204*	Thu 10/26	14:00	12.20	-	-	-	-	0.09	-	-	-	-	-	-	-	-	98.4	1.2	-	-	-	-	
PHV-204*	Thu 10/26	14:10	12.23	6.94	0.02	0.42	6.25	0.09	1.30	1.5	15.8	93.7	98.7	-	-	-	98.4	1.2	83.97	0.81	12.23	66.08	1504
PHV-204*	Thu 10/26	15:10	13.35	-	-	-	-	0.11	-	-	-	-	-	-	-	-	98.1	1.6	-	-	-	-	-
PHV-204*	Thu 10/26	16:05	13.41	-	-	-	-	0.15	-	-	-	-	-	-	-	-	97.4	2.2	-	-	-	-	-
PHV-204*	Thu 10/26	17:00	-	-	-	-	-	0.16	-	-	-	-	-	-	-	-	97.3	-	-	-	-	-	-
PHV-204	Thu 10/26	17:40	-	-	-	-	-	0.22	-	-	-	-	-	-	-	-	96.2	-	-	-	-	-	-
PHV-204	Thu 10/26	18:00	12.85	-	-	-	-	0.21	-	-	-	-	-	-	-	-	96.4	3.0	-	-	-	-	-
PHV-204	Thu 10/26	20:00	13.20	-	-	-	-	0.25	-	-	-	-	-	-	-	-	95.7	3.6	-	-	-	-	-
Averages			13.03	-	-	-	-	0.23	-	-	-	-	-	-	-	-	96.1	3.3	-	-	-	-	-
Baseline, 17.5 ft/s, 1300 gpm																							
PHV-205	Thu 10/26	22:00	12.47	-	-	-	-	0.29	-	-	-	-	-	-	-	-	95.1	3.9	-	-	-	-	-
PHV-205	Fri 10/27	00:01	12.34	-	-	-	-	0.36	-	-	-	-	-	-	-	-	93.9	4.8	-	-	-	-	-
Averages			12.41	-	-	-	-	0.33	-	-	-	-	-	-	-	-	94.5	4.4	-	-	-	-	-
Baseline, 15 ft/s, 1300 gpm																							
PHV-206	Fri 10/27	02:00	12.11	-	-	-	-	0.35	-	-	-	-	-	-	-	-	94.1	4.6	-	-	-	-	-
PHV-206	Fri 10/27	04:00	11.92	-	-	-	-	0.36	-	-	-	-	-	-	-	-	93.9	4.7	-	-	-	-	-
Averages			12.02	-	-	-	-	0.36	-	-	-	-	-	-	-	-	94.0	4.6	-	-	-	-	-
Baseline, 10 ft/s, 1300 gpm																							
PHV-207	Fri 10/27	06:00	11.46	-	-	-	-	0.35	-	-	-	-	-	-	-	-	94.1	4.3	-	-	-	-	-
PHV-207	Fri 10/27	07:59	11.78	-	-	-	-	0.40	-	-	-	-	-	-	-	-	93.2	-	82.52	-	-	-	-
PHV-207	Fri 10/27	08:00	11.94	-	-	-	-	0.40	-	-	-	-	-	-	-	-	93.2	5.2	-	-	-	-	-
Averages			11.73	-	-	-	-	0.38	-	-	-	-	-	-	-	-	93.5	4.8	82.52	-	-	-	-
Baseline, 17.5 ft/s, 1300 gpm																							
PHV-205R	Fri 10/27	09:00	12.86	-	-	-	-	0.34	-	-	-	-	-	-	-	-	94.2	4.8	-	-	-	-	-
PHV-205R	Fri 10/27	10:00	13.26	-	-	-	-	0.30	-	-	-	-	-	-	-	-	94.9	4.4	-	-	-	-	-
PHV-205R	Fri 10/27	10:30	13.45	-	-	-	-	0.31	-	-	-	-	-	-	-	-	94.7	4.6	-	-	-	-	-
PHV-205R	Fri 10/27	11:20	13.12	-	-	-	-	0.28	-	-	-	-	-	-	-	-	95.2	4.0	-	-	-	-	-
PHV-205R	Fri 10/27	12:00	13.13	-	-	-	-	0.25	-	-	-	-	-	-	-	-	95.7	3.6	-	-	-	-	-
Averages			13.24	-	-	-	-	0.30	-	-	-	-	-	-	-	-	95.0	4.1	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. Util. (%)	IR Ox. Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	CPFC Wt%	Thickener Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
Baseline, 10 ft/s, 1700 gpm																				
PHV-203*	Fri 10/27	14:06	12.16	-	-	-	-	0.41	-	-	-	-	-	93.1	5.4	-	-	-	-	-
PHV-203*	Fri 10/27	15:55	12.36	-	-	-	-	0.42	-	-	-	-	-	92.9	5.7	-	-	-	-	-
PHV-203	Fri 10/27	16:00	12.38	-	-	-	-	0.43	-	-	-	-	-	92.8	5.8	-	-	-	-	-
PHV-203	Fri 10/27	18:00	12.94	-	-	-	-	0.38	-	-	-	-	-	93.6	5.4	-	-	-	-	-
PHV-203	Fri 10/27	18:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-203	Fri 10/27	20:00	12.18	-	-	-	-	0.26	-	-	-	-	-	95.6	3.4	-	-	-	-	-
Averages			12.40	-	-	-	-	0.36	-	-	-	-	-	94.0	4.9	-	-	-	-	-
Baseline, 15 ft/s, 1700 gpm																				
PHV-202	Fri 10/27	22:00	12.86	-	-	-	-	0.25	-	-	-	-	-	95.7	3.5	-	-	-	-	-
PHV-202	Sat 10/28	00:01	12.70	-	-	-	-	0.23	-	-	-	-	-	96.1	3.2	-	-	-	-	-
Averages			12.78	-	-	-	-	0.24	-	-	-	-	-	95.9	3.4	-	-	-	-	-
Baseline, 17.5 ft/s, 1700 gpm																				
PHV-201	Sat 10/28	02:00	12.25	-	-	-	-	0.25	-	-	-	-	-	95.7	3.3	-	-	-	-	-
PHV-201	Sat 10/28	04:00	12.12	-	-	-	-	0.27	-	-	-	-	-	95.4	3.6	-	-	-	-	-
Averages			12.19	-	-	-	-	0.26	-	-	-	-	-	95.6	3.4	-	-	-	-	-
Baseline, 20 ft/s, 1700 gpm																				
PHV-200	Sat 10/28	06:00	12.24	-	-	-	-	0.31	-	-	-	-	-	94.7	4.1	-	-	-	-	-
PHV-200	Sat 10/28	07:30	12.32	-	-	-	-	0.34	-	-	-	-	-	94.2	4.6	82.27	-	-	-	-
PHV-200	Sat 10/28	08:00	11.63	-	-	-	-	0.38	-	-	-	-	-	93.6	4.8	-	-	-	-	-
Averages			12.06	-	-	-	-	0.34	-	-	-	-	-	94.2	4.5	82.27	-	-	-	-
Baseline, 17.5 ft/s, 1700 gpm																				
PHV-201R	Sat 10/28	08:25	11.74	-	-	-	-	0.41	-	-	-	-	-	93.1	5.2	-	-	-	-	-
PHV-201R	Sat 10/28	10:00	10.67	-	-	-	-	0.38	-	-	-	-	-	93.6	4.4	89.94	-	-	-	-
PHV-201R	Sat 10/28	12:00	-	-	-	-	-	0.39	-	-	-	-	-	93.4	-	-	-	-	-	-
PHV-201R	Sat 10/28	12:15	-	-	-	-	-	0.45	-	-	-	-	-	92.4	-	-	-	-	-	-
Averages			11.21	-	-	-	-	0.41	-	-	-	-	-	93.1	4.8	89.94	-	-	-	-
Baseline, 17.5 ft/s, 650 gpm																				
PHV-209	Sat 10/28	14:00	10.19	-	-	-	-	0.40	-	-	-	-	-	93.2	4.4	-	-	-	-	-
PHV-209	Sat 10/28	16:00	11.32	-	-	-	-	0.33	-	-	-	-	-	94.4	4.0	-	-	-	-	-
Averages			10.76	-	-	-	-	0.37	-	-	-	-	-	93.8	4.2	-	-	-	-	-
Baseline, 20 ft/s, 650 gpm																				
PHV-208	Sat 10/28	18:00	13.47	-	-	-	-	0.27	-	-	-	-	-	95.4	4.0	-	-	-	-	-
PHV-208	Sat 10/28	20:00	11.39	-	-	-	-	0.17	-	-	-	-	-	97.1	2.1	-	-	-	-	-
Averages			12.43	-	-	-	-	0.22	-	-	-	-	-	96.2	3.0	-	-	-	-	-
Baseline, 15 ft/s, 650 gpm																				
PHV-210	Sat 10/28	22:00	11.17	-	-	-	-	0.13	-	-	-	-	-	97.8	1.6	-	-	-	-	-
PHV-210	Sun 10/29	00:01	13.06	-	-	-	-	0.13	-	-	-	-	-	97.8	1.9	-	-	-	-	-
Averages			12.12	-	-	-	-	0.13	-	-	-	-	-	97.8	1.7	-	-	-	-	-
Baseline, 10 ft/s, 650 gpm																				
PHV-211	Sun 10/29	02:00	10.71	-	-	-	-	0.09	-	-	-	-	-	98.4	1.0	-	-	-	-	-
PHV-211	Sun 10/29	04:00	11.39	-	-	-	-	0.11	-	-	-	-	-	98.1	1.4	-	-	-	-	-
Averages			11.05	-	-	-	-	0.10	-	-	-	-	-	98.3	1.2	-	-	-	-	-
Baseline, 20 ft/s, 650 gpm																				
PHV-208R	Sun 10/29	06:00	11.39	-	-	-	-	0.17	-	-	-	-	-	97.1	2.1	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	IR Ox. (%)	Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	CPAFC Wt%	Thickener Unit (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
PHV-208R	Sun 10/29	08:00	11.43	-	-	-	-	0.16	-	-	-	-	-	-	-	97.3	2.0	-	-	-	-	-
	Averages		11.41	-	-	-	-	0.17	-	-	-	-	-	-	-	97.2	2.0	-	-	-	-	-
<i>Carryover, Munters, 15 fps, 1700</i>																						
PHV-214*	Sun 10/29	10:00	12.56	-	-	-	-	0.17	-	-	-	-	-	-	-	97.1	2.3	-	-	-	-	-
PHV-214*	Sun 10/29	10:45	12.89	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.5	83.57	-	-	-	-
PHV-214*	Sun 10/29	12:00	12.79	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.5	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	0.23	-	-	-	-	-	-	-	96.0	-	-	-	-	-	-
PHV-214*	Sun 10/29	13:25	12.95	-	-	-	-	0.22	-	-	-	-	-	-	-	96.2	3.1	-	-	-	-	-
PHV-214*	Sun 10/29	14:00	12.70	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.3	-	-	-	-	-
PHV-214	Sun 10/29	16:00	12.83	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	4.2	-	-	-	-	-
PHV-214	Sun 10/29	18:00	12.82	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.6	-	-	-	-	-
PHV-214	Sun 10/29	20:00	13.52	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	5.0	-	-	-	-	-
PHV-214	Sun 10/29	22:00	12.82	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.9	-	-	-	-	-
PHV-214	Mon 10/30	00:01	12.42	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.9	-	-	-	-	-
PHV-214	Mon 10/30	02:00	15.73	-	-	-	-	0.40	-	-	-	-	-	-	-	93.2	7.0	-	-	-	-	-
PHV-214	Mon 10/30	04:00	12.53	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	5.1	-	-	-	-	-
PHV-214	Mon 10/30	06:00	12.68	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.3	-	-	-	-	-
PHV-214	Mon 10/30	07:45	12.72	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	5.4	83.24	-	-	-	-
PHV-214	Mon 10/30	08:00	12.82	-	-	-	-	0.40	-	-	-	-	-	-	-	93.2	5.6	-	-	-	-	-
PHV-214	Mon 10/30	09:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:00	12.22	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.8	-	-	-	-	-
PHV-214	Mon 10/30	10:35	12.07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Averages		12.93	-	-	-	-	0.36	-	-	-	-	-	-	-	94.2	4.9	83.2	-	-	-	-
<i>Carryover, M, 17.5 fps, 1700</i>																						
PHV-213*	Mon 10/30	12:00	12.23	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:10	12.20	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	3.6	-	-	-	-	-
PHV-213*	Mon 10/30	13:55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	15:40	12.90	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	-	-	-	-	-	-
PHV-213	Mon 10/30	16:00	12.18	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	4.0	-	-	-	-	-
PHV-213	Mon 10/30	20:00	12.22	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.7	-	-	-	-	-
PHV-213	Mon 10/30	00:01	12.84	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.3	-	-	-	-	-
PHV-213	Tue 10/31	04:00	12.69	-	-	-	-	0.41	-	-	-	-	-	-	-	93.1	5.7	-	-	-	-	-
PHV-213	Tue 10/31	06:30	12.72	-	-	-	-	0.41	-	-	-	-	-	-	-	93.1	5.7	-	-	-	-	-
PHV-213	Tue 10/31	08:00	12.90	-	-	-	-	0.42	-	-	-	-	-	-	-	92.9	5.9	82.22	-	-	-	-
PHV-213	Tue 10/31	11:00	13.17	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	5.6	-	-	-	-	-
PHV-213	Tue 10/31	12:00	12.72	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	4.4	-	-	-	-	-
	Averages		12.68	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	5.2	82.22	-	-	-	-
<i>Carryover, M, 20 fps, 1700 gpm</i>																						
PHV-212*	Tue 10/31	14:00	13.03	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.1	-	-	-	-	-
PHV-212*	Tue 10/31	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Tue 10/31	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	00:01	12.75	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.9	-	-	-	-	-
PHV-212	Wed 11/01	04:00	12.79	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	5.0	-	-	-	-	-
PHV-212	Wed 11/01	07:40	11.99	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.7	84.91	-	-	-	-
	Averages		12.64	-	-	-	-	0.34	-	-	-	-	-	-	-	94.24	4.68	84.91	-	-	-	-
<i>Carryover, M, 20 fps, 1300 gpm</i>																						
PHV-215*	Wed 11/01	12:00	12.91	-	-	-	-	0.44	-	-	-	-	-	-	-	92.6	6.2	-	-	-	-	-
PHV-215*	Wed 11/01	14:00	11.83	-	-	-	-	0.46	-	-	-	-	-	-	-	92.2	6.0	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	IR Ox. (%)	Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	Thickener CPFC Wt%	Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
PHV-215*	Wed 11/01	15:45	11.48	-	-	-	-	0.44	-	-	-	-	-	-	-	92.6	5.5	-	-	-	-	-
PHV-215*	Wed 11/01	16:00	11.60	-	-	-	-	0.43	-	-	-	-	-	-	-	92.8	5.4	-	-	-	-	-
PHV-215*	Wed 11/01	20:00	11.26	-	-	-	-	0.41	-	-	-	-	-	-	-	93.1	5.0	-	-	-	-	-
PHV-215	Thu 11/02	00:01	10.92	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.2	-	-	-	-	-
PHV-215	Thu 11/02	04:00	10.83	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.2	-	-	-	-	-
PHV-215	Thu 11/02	07:20	10.97	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	4.6	84/88	-	-	-	-
PHV-215	Thu 11/02	08:00	12.01	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	5.1	-	-	-	-	-
PHV-215	Thu 11/02	09:30	11.06	-	-	-	-	0.42	-	-	-	-	-	-	-	92.9	5.0	-	-	-	-	-
Averages			11.16	-	-	-	-	0.38	-	-	-	-	-	-	-	93.5	4.6	-	-	-	-	-
<i>Baseline, 13.5 ft/sec, 1300 gpm</i>																						
PHV-264	Thu 11/02	12:00	11.71	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.3	-	-	-	-	-
PHV-264	Thu 11/02	13:40	12.02	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.7	-	-	-	-	-
Averages			11.87	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.5	-	-	-	-	-
<i>Baseline, 10 ft/sec, 650 gpm</i>																						
PHV-211R	Thu 11/02	15:15	11.93	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	4.8	-	-	-	-	-
PHV-211R	Thu 11/02	15:45	11.53	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	4.6	-	-	-	-	-
PHV-211R	Thu 11/02	16:00	11.31	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	4.6	-	-	-	-	-
PHV-211R	Thu 11/02	16:30	11.02	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.3	-	-	-	-	-
PHV-211R	Thu 11/02	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	18:00	10.86	-	-	-	-	0.33	-	-	-	-	-	-	-	94.3	3.9	-	-	-	-	-
PHV-211R	Thu 11/02	20:00	10.69	-	-	-	-	0.31	-	-	-	-	-	-	-	94.8	3.5	-	-	-	-	-
Averages			11.22	-	-	-	-	0.35	-	-	-	-	-	-	-	94.0	4.3	-	-	-	-	-
<i>Baseline, 15 ft/sec, 650 gpm</i>																						
PHV-210R	Thu 11/02	22:00	11.20	-	-	-	-	0.23	-	-	-	-	-	-	-	96.0	2.8	-	-	-	-	-
PHV-210R	Fri 11/03	00:01	11.53	-	-	-	-	0.19	-	-	-	-	-	-	-	96.8	2.3	-	-	-	-	-
Averages			11.37	-	-	-	-	0.21	-	-	-	-	-	-	-	96.4	2.6	-	-	-	-	-
<i>Baseline, 11.5 ft/sec, 1300 gpm</i>																						
PHV-265	Fri 11/03	02:00	12.49	-	-	-	-	0.19	-	-	-	-	-	-	-	96.7	2.6	-	-	-	-	-
PHV-265	Fri 11/03	04:00	12.80	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.3	-	-	-	-	-
Averages			12.65	-	-	-	-	0.22	-	-	-	-	-	-	-	96.3	3.0	-	-	-	-	-
<i>Baseline, 20 ft/sec, 650 gpm</i>																						
PHV-208RR*	Fri 11/03	06:00	11.87	-	-	-	-	0.25	-	-	-	-	-	-	-	95.8	3.2	-	-	-	-	-
PHV-208RR*	Fri 11/03	08:00	12.79	-	-	-	-	0.25	-	-	-	-	-	-	-	95.8	3.5	-	-	-	-	-
PHV-208RR	Fri 11/03	09:00	13.76	6.48	0.04	0.00	6.06	0.29	2.2	1.3	10.0	100.0	95.5	-	-	95.1	4.4	82.97	-	-	-	-
PHV-208RR	Fri 11/03	10:00	13.58	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	4.6	-	-	-	-	-
PHV-208RR	Fri 11/03	10:05	13.25	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	4.4	-	-	-	-	-
PHV-208RR	Fri 11/03	11:30	14.08	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	5.7	-	-	-	-	-
PHV-208RR	Fri 11/03	12:00	12.25	-	-	-	-	0.46	-	-	-	-	-	-	-	92.3	6.1	-	-	-	-	-
Averages			13.38	6.48	0.04	0.00	6.06	0.35	2.2	1.3	10.0	100.0	95.5	-	-	94.1	5.0	82.97	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

November 1995

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	IR Ox. (%)	Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	CPAFC Wt%	Thickener Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
<i>Baseline, 15 ft/sec, 650 gpm</i>																						
PHV-210RR*	Fri 11/03	13:00	12.28	-	-	-	-	0.43	-	-	-	-	-	-	-	92.8	5.8	-	-	-	-	-
PHV-210RR*	Fri 11/03	14:00	11.83	-	-	-	-	0.55	-	-	-	-	-	-	-	90.8	7.1	-	-	-	-	-
PHV-210RR*	Fri 11/03	15:15	12.10	-	-	-	-	0.54	-	-	-	-	-	-	-	91.0	7.1	-	-	-	-	-
PHV-210RR*	Fri 11/03	16:00	12.22	-	-	-	-	0.58	-	-	-	-	-	-	-	90.3	7.7	-	-	-	-	-
PHV-210RR*	Fri 11/03	16:30	12.04	-	-	-	-	0.54	-	-	-	-	-	-	-	91.0	7.1	-	-	-	-	-
PHV-210RR	Fri 11/03	18:00	12.19	-	-	-	-	0.41	-	-	-	-	-	-	-	93.1	5.4	-	-	-	-	-
PHV-210RR	Fri 11/03	20:00	11.84	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	3.7	-	-	-	-	-
Averages			12.02	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.6	-	-	-	-	-
<i>Baseline, 15 ft/sec, 1300 gpm</i>																						
PHV-206R	Fri 11/03	22:00	12.57	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.6	-	-	-	-	-
PHV-206R	Sat 11/04	00:01	12.66	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.2	-	-	-	-	-
Averages			12.62	-	-	-	-	0.25	-	-	-	-	-	-	-	95.8	3.4	-	-	-	-	-
<i>Baseline, 11.5 ft/sec, 1300 gpm</i>																						
PHV-265R	Sat 11/04	02:00	12.33	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.2	-	-	-	-	-
PHV-265R	Sat 11/04	04:00	12.80	-	-	-	-	0.25	-	-	-	-	-	-	-	95.8	3.5	-	-	-	-	-
PHV-265R	Sat 11/04	06:00	12.38	-	-	-	-	0.25	-	-	-	-	-	-	-	95.7	3.4	-	-	-	-	-
Averages			12.50	-	-	-	-	0.25	-	-	-	-	-	-	-	95.8	3.4	-	-	-	-	-
<i>Baseline, 20 ft/sec, 1300 gpm</i>																						
PHV-204R	Sat 11/04	07:22	12.99	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.1	83.07	-	-	-	-
PHV-204R	Sat 11/04	08:00	12.75	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	4.3	-	-	-	-	-
PHV-204R	Sat 11/04	10:00	13.50	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	5.3	-	-	-	-	-
PHV-204R	Sat 11/04	11:50	14.65	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	6.2	-	-	-	-	-
Averages			13.47	-	-	-	-	0.33	-	-	-	-	-	-	-	94.3	5.0	83.07	-	-	-	-
<i>Baseline, 17.5 ft/sec, 1300 gpm</i>																						
PHV-205RR	Sat 11/04	14:00	13.26	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	5.1	-	-	-	-	-
PHV-205RR	Sat 11/04	16:00	12.56	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.9	-	-	-	-	-
PHV-205RR*	Sat 11/04	18:00	12.01	-	-	-	-	0.21	-	-	-	-	-	-	-	96.4	2.7	-	-	-	-	-
PHV-205RR*	Sat 11/04	20:00	11.75	-	-	-	-	0.05	-	-	-	-	-	-	-	99.1	0.6	-	-	-	-	-
PHV-205RR*	Sat 11/04	22:00	11.47	-	-	-	-	0.04	-	-	-	-	-	-	-	99.3	0.5	-	-	-	-	-
PHV-205RR*	Sun 11/05	00:00	12.13	-	-	-	-	0.15	-	-	-	-	-	-	-	97.4	2.0	-	-	-	-	-
PHV-205RR*	Sun 11/05	02:00	12.41	-	-	-	-	0.20	-	-	-	-	-	-	-	96.6	2.7	-	-	-	-	-
PHV-205RR*	Sun 11/05	04:00	13.03	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.3	-	-	-	-	-
PHV-205RR*	Sun 11/05	06:00	12.87	-	-	-	-	0.22	-	-	-	-	-	-	-	96.2	3.1	-	-	-	-	-
Averages			12.91	-	-	-	-	0.36	-	-	-	-	-	-	-	94.0	5.0	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	IR Ox. (%)	Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	CPFC Wt%	Thickener Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
DBA, 10 ft/sec, 650 gpm																						
PHV-221*	Sun 11/05	08:00	12.12	-	-	-	-	0.05	-	-	-	-	-	-	-	99.1	0.7	-	-	-	-	-
PHV-221*	Sun 11/05	10:10	12.02	-	-	-	-	0.05	-	-	-	-	-	-	-	99.1	0.7	82.69	-	-	-	-
PHV-221*	Sun 11/05	11:30	11.95	-	-	-	-	0.04	-	-	-	-	-	-	-	99.3	0.5	-	-	-	-	-
PHV-221*	Sun 11/05	14:00	12.49	-	-	-	-	0.06	-	-	-	-	-	-	-	99.0	0.8	-	-	-	-	-
PHV-221*	Sun 11/05	16:00	12.24	-	-	-	-	0.16	-	-	-	-	-	-	-	97.3	2.1	-	-	-	-	-
PHV-221	Sun 11/05	18:00	12.31	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	3.6	-	-	-	-	-
PHV-221	Sun 11/05	20:00	12.94	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	5.1	-	-	-	-	-
PHV-221	Sun 11/05	22:00	11.80	-	-	-	-	0.40	-	-	-	-	-	-	-	93.2	5.1	-	-	-	-	-
PHV-221	Mon 11/06	00:00	12.70	-	-	-	-	0.40	-	-	-	-	-	-	-	93.2	5.6	-	-	-	-	-
PHV-221	Mon 11/06	02:00	10.65	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	4.5	-	-	-	-	-
PHV-221	Mon 11/06	04:00	10.49	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	4.4	-	-	-	-	-
PHV-221	Mon 11/06	06:00	11.52	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.1	-	-	-	-	-
PHV-221	Mon 11/06	07:10	10.98	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	3.7	85.67	-	-	-	-
PHV-221	Mon 11/06	08:00	11.67	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	4.9	-	-	-	-	-
PHV-221	Mon 11/06	10:00	11.66	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.4	-	-	-	-	-
PHV-221	Mon 11/06	10:50	11.54	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.3	-	-	-	-	-
PHV-221	Mon 11/06	12:00	13.06	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.1	-	-	-	-	-
Averages			11.78	-	-	-	-	0.35	-	-	-	-	-	-	-	94.0	4.5	85.67	-	-	-	-
DBA, 15 ft/sec, 650 gpm																						
PHV-220*	Mon 11/06	12:45	12.06	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.0	-	-	-	-	-
PHV-220*	Mon 11/06	14:00	13.02	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.6	-	-	-	-	-
PHV-220*	Mon 11/06	14:15	12.96	-	-	-	-	0.18	-	-	-	-	-	-	-	97.0	2.5	-	-	-	-	-
PHV-220*	Mon 11/06	15:35	12.58	-	-	-	-	0.19	-	-	-	-	-	-	-	96.7	2.6	-	-	-	-	-
PHV-220	Mon 11/06	16:00	12.67	-	-	-	-	0.21	-	-	-	-	-	-	-	96.5	2.9	-	-	-	-	-
PHV-220	Mon 11/06	16:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	17:30	12.58	-	-	-	-	0.41	-	-	-	-	-	-	-	93.1	5.6	-	-	-	-	-
Averages			12.63	-	-	-	-	0.31	-	-	-	-	-	-	-	94.8	4.2	-	-	-	-	-
DBA, 20 ft/sec, 650 gpm																						
PHV-218	Mon 11/06	17:50	12.74	-	-	-	-	0.39	-	-	-	-	-	-	-	93.4	5.5	-	-	-	-	-
PHV-218	Mon 11/06	18:00	12.82	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.3	-	-	-	-	-
PHV-218	Mon 11/06	19:10	13.33	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.5	-	-	-	-	-
PHV-218*	Mon 11/06	20:00	13.07	-	-	-	-	0.48	-	-	-	-	-	-	-	92.0	6.8	-	-	-	-	-
PHV-218*	Mon 11/06	21:00	13.23	-	-	-	-	0.64	-	-	-	-	-	-	-	89.4	9.3	-	-	-	-	-
PHV-218*	Mon 11/06	21:30	13.68	-	-	-	-	0.76	-	-	-	-	-	-	-	87.5	11.4	-	-	-	-	-
Averages			12.96	-	-	-	-	0.38	-	-	-	-	-	-	-	93.5	5.4	-	-	-	-	-
DBA, Tan., 10 ft/sec, 650 gpm																						
PHV-266*	Thu 11/09	00:01	13.32	-	-	-	-	0.53	-	-	-	-	-	-	-	91.1	7.7	-	-	-	-	-
PHV-266*	Thu 11/09	02:00	12.88	-	-	-	-	0.44	-	-	-	-	-	-	-	92.6	6.2	-	-	-	-	-
PHV-266	Thu 11/09	04:00	12.84	-	-	-	-	0.40	-	-	-	-	-	-	-	93.2	5.6	-	-	-	-	-
PHV-266	Thu 11/09	06:00	12.53	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.2	-	-	-	-	-
PHV-266	Thu 11/09	06:30	12.36	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.1	-	-	-	-	-
PHV-266	Thu 11/09	08:00	12.55	-	-	-	-	0.38	-	-	-	-	-	-	-	93.5	5.3	81.89	-	-	-	-
PHV-266	Thu 11/09	09:45	12.44	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.5	-	-	-	-	-
PHV-266	Thu 11/09	10:00	12.64	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	4.3	-	-	-	-	-
PHV-266	Thu 11/09	10:45	12.59	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.0	-	-	-	-	-
PHV-266	Thu 11/09	12:00	12.51	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.5	-	-	-	-	-
Averages			12.56	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.7	81.89	-	-	-	-

* = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt	Mol	Solids Ox.	Solids Util.	IR Ox.	IR Util.	CO3-	L.S.	CPFC Wt%	Thickener	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
										Solids Closure (%)	Solids Closure (%)					Est. Util. (%)	Loading (g/L)		Unit Area (ft2/tpd)			
PHV-267	Thu 11/09	14:00	14.68	-	-	-	-	0.25	-	-	-	-	-	-	-	95.7	4.1	-	-	-	-	-
PHV-267	Thu 11/09	15:00	13.06	-	-	-	-	0.21	-	-	-	-	-	-	-	96.4	3.0	-	-	-	-	-
PHV-267	Thu 11/09	16:00	13.07	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.6	-	-	-	-	-
PHV-267	Thu 11/09	17:00	16.39	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	4.2	-	-	-	-	-
Averages			14.30	-	-	-	-	0.22	-	-	-	-	-	-	-	96.3	3.5	-	-	-	-	-
<i>DBA, Tan., 20 ft/sec, 650 gpm</i>																						
PHV-268	Thu 11/09	18:00	13.60	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	4.2	-	-	-	-	-
PHV-268	Thu 11/09	20:00	13.64	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	4.6	-	-	-	-	-
Averages			13.62	-	-	-	-	0.30	-	-	-	-	-	-	-	95.0	4.4	-	-	-	-	-
<i>DBA, Tan., 17.5 ft/sec, 650 gpm</i>																						
PHV-269	Thu 11/09	22:00	14.87	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	5.1	-	-	-	-	-
PHV-269	Fri 11/10	00:05	12.48	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	3.9	-	-	-	-	-
Averages			13.68	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	4.5	-	-	-	-	-
<i>DBA, Tan., 20 ft/sec, 1300 gpm</i>																						
PHV-270	Fri 11/10	02:00	13.38	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.6	-	-	-	-	-
PHV-270	Fri 11/10	04:00	12.47	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.9	-	-	-	-	-
Averages			12.93	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	5.2	-	-	-	-	-
<i>DBA, Tan., 20 ft/sec, 1700 gpm</i>																						
PHV-271	Fri 11/10	06:00	13.61	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	5.1	-	-	-	-	-
PHV-271	Fri 11/10	07:55	13.43	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.6	82.60	-	-	-	-
PHV-271	Fri 11/10	08:00	9.12	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	3.6	-	-	-	-	-
Averages			12.05	-	-	-	-	0.36	-	-	-	-	-	-	-	93.8	4.8	82.60	-	-	-	-
<i>DBA, Tan., 20 ft/sec, 650 gpm</i>																						
PHV-268R	Fri 11/10	09:50	12.53	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.8	-	-	-	-	-
PHV-268R	Fri 11/10	11:00	13.61	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	4.8	-	-	-	-	-
PHV-268R	Fri 11/10	12:00	13.46	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	4.7	-	-	-	-	-
Averages			13.20	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.8	-	-	-	-	-
<i>DBA, Tan., 15 ft/sec, 650 gpm</i>																						
PHV-267R	Fri 11/10	13:10	12.46	-	-	-	-	0.22	-	-	-	-	-	-	-	96.2	3.0	-	-	-	-	-
PHV-267R	Fri 11/10	14:00	12.22	-	-	-	-	0.20	-	-	-	-	-	-	-	96.6	2.7	-	-	-	-	-
PHV-267R	Fri 11/10	15:00	12.46	-	-	-	-	0.22	-	-	-	-	-	-	-	96.2	3.0	-	-	-	-	-
PHV-267R	Fri 11/10	16:07	12.55	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.2	-	-	-	-	-
PHV-267R	Fri 11/10	17:00	14.47	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	4.5	-	-	-	-	-
Averages			12.83	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.3	-	-	-	-	-

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	IR Ox. (%)	Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	CPAFC Wt%	Thickener Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
<i>Tan., 17.5 ft/sec, 1300 gpm</i>																						
PHV-245*	Sat 11/11	07:30	-	-	-	-	-	0.76	-	-	-	-	-	-	-	87.5	-	-	-	-	-	-
PHV-245*	Sat 11/11	08:05	3.39	-	-	-	-	0.57	-	-	-	-	-	-	-	90.5	2.0	-	-	-	-	-
PHV-245*	Sat 11/11	10:00	5.96	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	2.2	-	-	-	-	-
PHV-245*	Sat 11/11	11:15	7.92	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	2.4	-	-	-	-	-
PHV-245*	Sat 11/11	12:00	8.98	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	2.6	-	-	-	-	-
PHV-245	Sat 11/11	14:00	12.16	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	3.6	-	-	-	-	-
PHV-245	Sat 11/11	16:00	12.06	-	-	-	-	0.14	-	-	-	-	-	-	-	97.6	1.8	-	-	-	-	-
PHV-245	Sat 11/11	18:00	11.94	-	-	-	-	0.12	-	-	-	-	-	-	-	97.9	1.6	-	-	-	-	-
PHV-245	Sat 11/11	20:00	13.23	-	-	-	-	0.09	-	-	-	-	-	-	-	98.4	1.3	-	-	-	-	-
Averages			12.35	-	-	-	-	0.16	-	-	-	-	-	-	-	97.3	2.1	-	-	-	-	-
<i>Tan., 20 ft/sec, 1300 gpm</i>																						
PHV-244	Sat 11/11	22:00	13.43	-	-	-	-	0.09	-	-	-	-	-	-	-	98.4	1.3	-	-	-	-	-
PHV-244	Sun 11/12	00:05	14.10	-	-	-	-	0.07	-	-	-	-	-	-	-	98.8	1.1	-	-	-	-	-
Averages			13.77	-	-	-	-	0.08	-	-	-	-	-	-	-	98.6	1.2	-	-	-	-	-
<i>Tan., 15 ft/sec, 1300 gpm</i>																						
PHV-246	Sun 11/12	02:00	13.85	-	-	-	-	0.05	-	-	-	-	-	-	-	99.1	0.8	-	-	-	-	-
PHV-246	Sun 11/12	04:00	13.08	-	-	-	-	0.04	-	-	-	-	-	-	-	99.3	0.6	-	-	-	-	-
Averages			13.47	-	-	-	-	0.05	-	-	-	-	-	-	-	99.2	0.7	-	-	-	-	-
<i>Tan., 10 ft/sec, 1300 gpm</i>																						
PHV-247	Sun 11/12	04:00	12.11	-	-	-	-	0.04	-	-	-	-	-	-	-	99.3	0.5	-	-	-	-	-
PHV-247	Sun 11/12	08:00	15.37	-	-	-	-	0.16	-	-	-	-	-	-	-	97.3	2.7	-	-	-	-	-
Averages			13.74	-	-	-	-	0.10	-	-	-	-	-	-	-	98.3	1.6	-	-	-	-	-
<i>Tan., 17.5 ft/sec, 1300 gpm</i>																						
PHV-245R	Sun 11/12	10:23	12.98	-	-	-	-	0.19	-	-	-	-	-	-	-	96.7	2.7	84.86	-	-	-	-
PHV-245R	Sun 11/12	12:00	14.29	-	-	-	-	0.21	-	-	-	-	-	-	-	96.4	3.3	-	-	-	-	-
Averages			13.64	-	-	-	-	0.20	-	-	-	-	-	-	-	96.6	3.0	84.86	-	-	-	-
<i>Tan., 17.5 ft/sec, 650 gpm</i>																						
PHV-249	Sun 11/12	12:45	12.02	-	-	-	-	0.17	-	-	-	-	-	-	-	97.1	2.2	-	-	-	-	-
PHV-249	Sun 11/12	14:00	11.69	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.3	-	-	-	-	-
PHV-249	Sun 11/12	16:00	11.65	-	-	-	-	0.19	-	-	-	-	-	-	-	96.8	2.4	-	-	-	-	-
Averages			11.79	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.3	-	-	-	-	-
<i>Tan., 20 ft/sec, 650 gpm</i>																						
PHV-248	Sun 11/12	18:00	12.59	-	-	-	-	0.22	-	-	-	-	-	-	-	96.2	3.0	-	-	-	-	-
PHV-248	Sun 11/12	20:00	12.94	-	-	-	-	0.23	-	-	-	-	-	-	-	96.0	3.3	-	-	-	-	-
Averages			12.77	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.2	-	-	-	-	-
<i>Tan., 15 ft/sec, 650 gpm</i>																						
PHV-250	Sun 11/12	22:00	12.11	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.2	-	-	-	-	-
PHV-250	Mon 11/13	00:05	12.64	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	3.9	-	-	-	-	-
Averages			12.38	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.5	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	IR Ox. (%)	Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	CPAFC Wt%	Thickener Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
<i>Tan., 10 ft/sec, 650 gpm</i>																						
PHV-251	Mon 11/13	02:00	12.46	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	3.9	-	-	-	-	-
PHV-251	Mon 11/13	04:00	13.12	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.9	-	-	-	-	-
Averages			12.79	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	4.4	-	-	-	-	-
<i>Tan., 20 ft/sec, 650 gpm</i>																						
PHV-248R	Mon 11/13	06:00	12.47	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.5	-	-	-	-	-
PHV-248R	Mon 11/13	06:40	13.32	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.8	84.34	-	-	-	-
PHV-248R	Mon 11/13	08:00	12.92	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.8	-	-	-	-	-
Averages			12.90	-	-	-	-	0.33	-	-	-	-	-	-	-	94.3	4.7	84.34	-	-	-	-
<i>Tan., 20 ft/sec, 1700 gpm</i>																						
PHV-240	Mon 11/13	09:40	15.24	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	5.2	-	-	-	-	-
PHV-240	Mon 11/13	10:00	14.32	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	5.1	-	-	-	-	-
PHV-240	Mon 11/13	11:15	13.86	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	4.0	-	-	-	-	-
PHV-240	Mon 11/13	12:00	13.71	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.6	-	-	-	-	-
Averages			14.28	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	4.5	-	-	-	-	-
<i>Tan., 17.5 ft/sec, 1700 gpm</i>																						
PHV-241	Mon 11/13	13:00	13.23	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.5	-	-	-	-	-
PHV-241	Mon 11/13	13:50	13.97	-	-	-	-	0.25	-	-	-	-	-	-	-	95.7	3.8	-	-	-	-	-
PHV-241	Mon 11/13	14:40	13.83	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	4.1	-	-	-	-	-
PHV-241	Mon 11/13	16:05	12.91	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	3.8	-	-	-	-	-
Averages			13.49	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.8	-	-	-	-	-
<i>Tan., 15 ft/sec, 1700 gpm</i>																						
PHV-242	Mon 11/13	16:35	12.75	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	3.8	-	-	-	-	-
PHV-242	Mon 11/13	18:00	12.61	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.0	-	-	-	-	-
PHV-242	Mon 11/13	20:00	13.64	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.3	-	-	-	-	-
Averages			13.00	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	4.0	-	-	-	-	-
<i>Tan., 10 ft/sec, 1700 gpm</i>																						
PHV-243	Mon 11/13	22:00	12.92	-	-	-	-	0.31	-	-	-	-	-	-	-	94.7	4.4	-	-	-	-	-
PHV-243	Tue 11/14	00:00	13.18	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.8	-	-	-	-	-
Averages			13.05	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.1	-	-	-	-	-
<i>Tan., 20 ft/sec, 1700 gpm</i>																						
PHV-240R	Tue 11/14	02:00	14.58	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	4.8	-	-	-	-	-
PHV-240R	Tue 11/14	04:00	13.25	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	4.1	-	-	-	-	-
Averages			13.92	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.5	-	-	-	-	-
<i>Tan., 20 ft/sec, 1300 gpm</i>																						
PHV-244R	Tue 11/14	06:00	11.59	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	3.8	-	-	-	-	-
PHV-244R	Tue 11/14	07:50	12.49	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.9	82.79	-	-	-	-
PHV-244R	Tue 11/14	08:00	-	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	-	-	-	-	-	-
Averages			12.04	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.3	82.79	-	-	-	-

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. Util. (%) (%)	IR Ox. Util. (%) (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	Thickener Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
<i>Tan., 15 ft/sec, 1300 gpm</i>																			
PHV-246R	Tue 11/14	10:00	12.48	-	-	-	-	0.39	-	-	-	-	-	93.4	5.3	-	-	-	-
PHV-246R	Tue 11/14	10:30	12.37	-	-	-	-	0.43	-	-	-	-	-	92.8	5.8	-	-	-	-
PHV-246R	Tue 11/14	12:00	12.43	-	-	-	-	0.45	-	-	-	-	-	92.4	6.1	-	-	-	-
Averages			12.43	-	-	-	-	0.42	-	-	-	-	-	92.9	5.7	-	-	-	-
<i>Tan., 10 ft/sec, 1300 gpm</i>																			
PHV-247R*	Tue 11/14	12:45	12.72	-	-	-	-	0.46	-	-	-	-	-	92.3	6.4	-	-	-	-
PHV-247R	Tue 11/14	13:50	12.95	-	-	-	-	0.42	-	-	-	-	-	92.9	6.0	-	-	-	-
PHV-247R	Tue 11/14	14:00	12.97	-	-	-	-	0.42	-	-	-	-	-	92.9	6.0	-	-	-	-
PHV-247R	Tue 11/14	15:25	12.51	-	-	-	-	0.38	-	-	-	-	-	93.6	5.2	-	-	-	-
PHV-247R	Tue 11/14	16:00	12.37	-	-	-	-	0.34	-	-	-	-	-	94.2	4.6	-	-	-	-
Averages			12.70	-	-	-	-	0.39	-	-	-	-	-	93.4	5.4	-	-	-	-
<i>Tan., 17.5 ft/sec, 650 gpm</i>																			
PHV-249R	Tue 11/14	17:00	11.40	-	-	-	-	0.32	-	-	-	-	-	94.6	4.0	-	-	-	-
PHV-249R	Tue 11/14	18:00	10.76	-	-	-	-	0.33	-	-	-	-	-	94.4	3.8	-	-	-	-
PHV-249R	Tue 11/14	20:00	11.15	-	-	-	-	0.32	-	-	-	-	-	94.6	3.9	-	-	-	-
Averages			11.10	-	-	-	-	0.32	-	-	-	-	-	94.5	3.9	-	-	-	-
<i>Tan., 15 ft/sec, 650 gpm</i>																			
PHV-250R	Tue 11/14	22:00	10.98	-	-	-	-	0.34	-	-	-	-	-	94.2	4.0	-	-	-	-
PHV-250R	Wed 11/15	00:00	11.69	-	-	-	-	0.37	-	-	-	-	-	93.7	4.7	-	-	-	-
Averages			11.34	-	-	-	-	0.36	-	-	-	-	-	94.0	4.4	-	-	-	-
<i>Tan., 17.5 ft/sec, 1300 gpm</i>																			
PHV-245RR	Wed 11/15	02:00	12.40	-	-	-	-	0.30	-	-	-	-	-	94.9	4.1	-	-	-	-
PHV-245RR	Wed 11/15	04:00	12.48	-	-	-	-	0.25	-	-	-	-	-	95.7	3.4	-	-	-	-
Averages			12.44	-	-	-	-	0.28	-	-	-	-	-	95.3	3.7	-	-	-	-
<i>Carryover, 15 ft/s, 1700 gpm</i>																			
PHV-224	Thu 11/16	00:00	11.62	-	-	-	-	0.34	-	-	-	-	-	94.2	4.3	-	-	-	-
PHV-224	Thu 11/16	04:00	12.22	-	-	-	-	0.36	-	-	-	-	-	93.9	4.8	-	-	-	-
PHV-224	Thu 11/16	08:00	12.37	-	-	-	-	0.36	-	-	-	-	-	93.9	4.9	83.20	-	-	-
PHV-224	Thu 11/16	12:00	12.78	-	-	-	-	0.38	-	-	-	-	-	93.6	5.3	-	-	-	-
PHV-224	Thu 11/16	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224	Thu 11/16	16:00	11.81	-	-	-	-	0.38	-	-	-	-	-	93.6	4.9	-	-	-	-
PHV-224	Thu 11/16	16:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			12.16	-	-	-	-	0.36	-	-	-	-	-	93.8	4.8	83.20	-	-	-
<i>Carryover, 17.5 ft/s, 1700 gpm</i>																			
PHV-223*	Thu 11/16	20:00	11.44	-	-	-	-	0.40	-	-	-	-	-	93.2	5.0	-	-	-	-
PHV-223	Fri 11/17	00:00	11.84	-	-	-	-	0.31	-	-	-	-	-	94.7	4.0	-	-	-	-
PHV-223	Fri 11/17	04:00	13.02	-	-	-	-	0.34	-	-	-	-	-	94.2	4.8	-	-	-	-
PHV-223	Fri 11/17	08:25	10.81	-	-	-	-	0.29	-	-	-	-	-	95.1	3.4	81.67	-	-	-
PHV-223	Fri 11/17	11:20	12.27	-	-	-	-	0.34	-	-	-	-	-	94.2	4.5	-	-	-	-
PHV-223	Fri 11/17	12:00	12.36	-	-	-	-	0.34	-	-	-	-	-	94.2	4.6	-	-	-	-
PHV-223	Fri 11/17	14:09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-223	Fri 11/17	16:00	11.73	-	-	-	-	0.34	-	-	-	-	-	94.2	4.3	-	-	-	-
Averages			12.01	-	-	-	-	0.33	-	-	-	-	-	94.5	4.3	81.67	-	-	-
<i>Carryover, 20 ft/s, 1700 gpm</i>																			
PHV-222*	Fri 11/17	20:00	11.97	-	-	-	-	0.28	-	-	-	-	-	95.2	3.6	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT	Ca	Mg	SO3	SO4	CO3	Inerts	Wt	Mol	Ox.	Util.	Ox.	Util.	CO3-	L.S.	CPAFC	Thickener	Initial	Final	Form
			Wt%							Solids	Solids					Est.	Loading		Unit			
			Solids	(mmol/g)	(mmol/g)	(mmol/g)	(mmol/g)	(mmol/g)	(wt%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(g/L)	Wt%	(ft2/tpd)	Wt%	Settled	Filtration
PHV-222	Sat 11/18	00:00	11.98	-	-	-	-	0.27	-	-	-	-	-	-	-	95.4	3.5	-	-	-	-	-
PHV-222	Sat 11/18	04:00	12.07	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.4	-	-	-	-	-
PHV-222	Sat 11/18	07:40	11.9	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	3.8	83.54	-	-	-	-
PHV-222	Sat 11/18	08:00	12.21	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	4.0	-	-	-	-	-
PHV-222	Sat 11/18	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	16:00	12.78	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	5.2	-	-	-	-	-
Averages			12.15	-	-	-	-	0.30	-	-	-	-	-	-	-	95.0	3.9	83.54	-	-	-	-
<i>Carryover, 20 ft/s, 1300 gpm</i>																						
PHV-225	Sat 11/18	20:00	11.28	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.2	-	-	-	-	-
PHV-225	Sun 11/19	00:00	11.74	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.6	-	-	-	-	-
PHV-225	Sun 11/19	04:00	10.86	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	3.9	-	-	-	-	-
PHV-225	Sun 11/19	08:00	10.80	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	3.7	-	-	-	-	-
PHV-225	Sun 11/19	11:12	11.02	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	3.9	-	-	-	-	-
PHV-225	Sun 11/19	12:00	12.38	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.6	-	-	-	-	-
PHV-225	Sun 11/19	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	16:00	11.00	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.2	-	-	-	-	-
Averages			11.30	-	-	-	-	0.34	-	-	-	-	-	-	-	94.3	4.1	-	-	-	-	-
<i>Carryover, 15 ft/s, 1700 gpm</i>																						
PHV-224R	Sun 11/19	20:00	12.27	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.1	-	-	-	-	-
PHV-224R	Mon 11/20	00:00	12.25	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.7	-	-	-	-	-
PHV-224R	Mon 11/20	08:00	12.24	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.7	-	-	-	-	-
PHV-224R	Mon 11/20	10:30	12.82	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.8	-	-	-	-	-
PHV-224R	Mon 11/20	12:00	12.49	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.5	-	-	-	-	-
Averages			12.41	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.7	-	-	-	-	-
<i>Baseline, 15 ft/sec, 1300 gpm</i>																						
PHV-272	Mon 11/20	13:04	11.21	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	4.5	-	-	-	-	-
PHV-272	Mon 11/20	14:00	12.05	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.3	-	-	-	-	-
PHV-272	Mon 11/20	14:30	11.38	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.1	-	-	-	-	-
PHV-272	Mon 11/20	16:00	12.52	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.5	-	-	-	-	-
Averages			11.79	-	-	-	-	0.34	-	-	-	-	-	-	-	94.2	4.3	-	-	-	-	-
<i>Baseline, 20 ft/sec, 1300 gpm</i>																						
PHV-273	Mon 11/20	17:30	12.48	-	-	-	-	0.32	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273	Mon 11/20	18:00	12.06	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	3.9	-	-	-	-	-
PHV-273*	Mon 11/20	20:00	11.64	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	2.9	-	-	-	-	-
Averages			12.27	-	-	-	-	0.31	-	-	-	-	-	-	-	94.9	3.9	-	-	-	-	-
<i>Baseline, 17.5 ft/sec, 1300 gpm</i>																						
PHV-274	Mon 11/20	22:00	11.66	-	-	-	-	0.13	-	-	-	-	-	-	-	97.8	1.6	-	-	-	-	-
PHV-274	Tue 11/21	00:00	12.59	-	-	-	-	0.11	-	-	-	-	-	-	-	98.1	1.5	-	-	-	-	-
Averages			12.13	-	-	-	-	0.12	-	-	-	-	-	-	-	97.9	1.6	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. (%)	Util. (%)	Ox. (%)	IR Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	Thickener Unit Area (ft2/tpd)	CPVC Wt%	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
Baseline, 11.5 ft/sec, 1300 gpm																						
PHV-275*	Tue 11/21	02:00	14.01	-	-	-	-	0.07	-	-	-	-	-	-	-	98.8	1.1	-	-	-	-	-
PHV-275*	Tue 11/21	04:00	12.13	-	-	-	-	0.15	-	-	-	-	-	-	-	97.4	2.0	-	-	-	-	-
PHV-275	Tue 11/21	06:00	11.55	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	3.8	82.10	-	-	-	-
Averages			11.55	-	-	-	-	0.30	-	-	-	-	-	-	-	94.9	3.8	82.10	-	-	-	-
Baseline, 10 ft/sec, 1300 gpm																						
PHV-276	Tue 11/21	07:15	11.66	-	-	-	-	0.35	-	-	-	-	-	-	-	94.1	4.4	-	-	-	-	-
PHV-276	Tue 11/21	08:00	11.44	-	-	-	-	0.37	-	-	-	-	-	-	-	93.7	4.6	-	-	-	-	-
PHV-276*	Tue 11/21	10:00	11.10	-	-	-	-	0.44	-	-	-	-	-	-	-	92.6	5.3	-	-	-	-	-
Averages			11.55	-	-	-	-	0.36	-	-	-	-	-	-	-	93.9	4.5	-	-	-	-	-
VLP, 20 ft/sec, 1300 gpm																						
PHV-232*	Tue 11/21	14:00	12.6	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	3.2	-	-	-	-	-
PHV-232*	Tue 11/21	14:15	13.07	-	-	-	-	0.24	-	-	-	-	-	-	-	95.9	3.4	-	-	-	-	-
PHV-232	Tue 11/21	16:00	11.42	-	-	-	-	0.44	-	-	-	-	-	-	-	92.6	5.4	-	-	-	-	-
PHV-232*	Tue 11/21	20:00	13.26	-	-	-	-	0.46	-	-	-	-	-	-	-	92.3	6.7	-	-	-	-	-
Averages			11.42	-	-	-	-	0.44	-	-	-	-	-	-	-	92.6	5.4	-	-	-	-	-
VLP, 17.5 ft/sec, 1300 gpm																						
PHV-233	Tue 11/21	22:00	13.35	-	-	-	-	0.47	-	-	-	-	-	-	-	92.1	6.9	-	-	-	-	-
PHV-233	Wed 11/22	00:00	15.97	-	-	-	-	0.54	-	-	-	-	-	-	-	91.0	9.6	-	-	-	-	-
Averages			14.66	-	-	-	-	0.51	-	-	-	-	-	-	-	91.5	8.3	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																						
PHV-234	Wed 11/22	02:00	12.81	-	-	-	-	0.63	-	-	-	-	-	-	-	89.5	8.8	-	-	-	-	-
PHV-234	Wed 11/22	04:00	12.90	-	-	-	-	0.65	-	-	-	-	-	-	-	89.2	9.2	-	-	-	-	-
Averages			12.86	-	-	-	-	0.64	-	-	-	-	-	-	-	89.4	9.0	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																						
PHV-235	Wed 11/22	06:00	11.55	-	-	-	-	0.65	-	-	-	-	-	-	-	89.2	8.1	-	-	-	-	-
PHV-235	Wed 11/22	08:00	11.52	-	-	-	-	0.63	-	-	-	-	-	-	-	89.5	7.9	84.10	-	-	-	-
Averages			11.54	-	-	-	-	0.64	-	-	-	-	-	-	-	89.4	8.0	84.10	-	-	-	-
VLP, 17.5 ft/sec, 1300 gpm																						
PHV-233R*	Wed 11/22	08:50	12.13	-	-	-	-	0.48	-	-	-	-	-	-	-	91.9	6.3	-	-	-	-	-
PHV-233R	Wed 11/22	10:00	12.31	-	-	-	-	0.40	-	-	-	-	-	-	-	93.2	5.4	-	-	-	-	-
PHV-233R	Wed 11/22	10:15	12.37	-	-	-	-	0.43	-	-	-	-	-	-	-	92.8	5.8	-	-	-	-	-
PHV-233R	Wed 11/22	12:00	12.75	-	-	-	-	0.41	-	-	-	-	-	-	-	93.1	5.7	-	-	-	-	-
Averages			12.48	-	-	-	-	0.41	-	-	-	-	-	-	-	93.0	5.6	-	-	-	-	-
VLP, 15 ft/sec, 650 gpm																						
PHV-238	Wed 11/22	13:45	10.50	-	-	-	-	0.45	-	-	-	-	-	-	-	92.3	5.2	-	-	-	-	-
PHV-238	Wed 11/22	14:00	10.50	-	-	-	-	0.46	-	-	-	-	-	-	-	92.9	4.8	-	-	-	-	-
PHV-238	Wed 11/22	15:05	10.62	-	-	-	-	0.42	-	-	-	-	-	-	-	93.6	4.4	-	-	-	-	-
PHV-238	Wed 11/22	16:00	10.81	-	-	-	-	0.38	-	-	-	-	-	-	-	92.9	4.8	-	-	-	-	-
Averages			10.61	-	-	-	-	0.43	-	-	-	-	-	-	-	92.9	4.8	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Wt Solids Closure (%)	Mol Solids Closure (%)	Solids Ox. Util. (%)	IR Ox. Util. (%)	CO3- Est. Util. (%)	L.S. Loading (g/L)	Thickener Unit CP&FC Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Filtration Rate lb/hr*sqft
VLP, 20 ft/sec, 650 gpm																			
PHV-236	Wed 11/22	17:35	13.74	-	-	-	-	0.43	-	-	-	-	-	92.8	6.5	-	-	-	-
PHV-236	Wed 11/22	18:00	11.16	-	-	-	-	0.38	-	-	-	-	-	93.6	4.6	-	-	-	-
PHV-236	Wed 11/22	20:00	10.76	-	-	-	-	0.28	-	-	-	-	-	95.2	3.3	-	-	-	-
Averages			11.89	-	-	-	-	0.36	-	-	-	-	-	93.8	4.8	-	-	-	-
VLP, 17.5 ft/sec, 650 gpm																			
PHV-237	Wed 11/22	22:00	13.00	-	-	-	-	0.34	-	-	-	-	-	94.2	4.8	-	-	-	-
PHV-237	Thu 11/23	00:00	12.17	-	-	-	-	0.29	-	-	-	-	-	95.1	3.8	-	-	-	-
Averages			12.59	-	-	-	-	0.32	-	-	-	-	-	94.6	4.3	-	-	-	-
VLP, 10 ft/sec, 650 gpm																			
PHV-239	Thu 11/23	02:00	10.69	-	-	-	-	0.29	-	-	-	-	-	95.1	3.3	-	-	-	-
PHV-239	Thu 11/23	04:00	10.64	-	-	-	-	0.27	-	-	-	-	-	95.4	3.1	-	-	-	-
Averages			10.67	-	-	-	-	0.28	-	-	-	-	-	95.2	3.2	-	-	-	-
VLP, 20 ft/sec, 650 gpm																			
PHV-236R	Thu 11/23	06:00	11.41	-	-	-	-	0.37	-	-	-	-	-	93.7	4.6	-	-	-	-
PHV-236R	Thu 11/23	08:00	11.12	-	-	-	-	0.41	-	-	-	-	-	93.1	4.9	-	-	-	-
Averages			11.27	-	-	-	-	0.39	-	-	-	-	-	93.4	4.8	-	-	-	-
VLP, 20 ft/sec, 1700 gpm																			
PHV-228	Thu 11/23	10:00	13.37	-	-	-	-	0.35	-	-	-	-	-	94.1	5.1	-	-	-	-
PHV-228	Thu 11/23	12:00	13.01	-	-	-	-	0.42	-	-	-	-	-	92.9	6.0	-	-	-	-
Averages			13.19	-	-	-	-	0.39	-	-	-	-	-	93.5	5.6	-	-	-	-
VLP, 17.5 ft/sec, 1700 gpm																			
PHV-229	Thu 11/23	14:00	12.35	-	-	-	-	0.49	-	-	-	-	-	91.8	6.6	-	-	-	-
PHV-229	Thu 11/23	16:00	14.03	-	-	-	-	0.53	-	-	-	-	-	91.1	8.2	-	-	-	-
Averages			13.19	-	-	-	-	0.51	-	-	-	-	-	91.4	7.4	-	-	-	-
VLP, 15 ft/sec, 1700 gpm																			
PHV-230	Thu 11/23	18:00	15.10	-	-	-	-	0.56	-	-	-	-	-	90.6	9.4	-	-	-	-
PHV-230	Thu 11/23	20:00	15.29	-	-	-	-	0.60	-	-	-	-	-	90.0	10.2	-	-	-	-
Averages			15.20	-	-	-	-	0.58	-	-	-	-	-	90.3	9.8	-	-	-	-
VLP, 10 ft/sec, 1700 gpm																			
PHV-231	Thu 11/23	22:00	12.66	-	-	-	-	0.61	-	-	-	-	-	89.8	8.4	-	-	-	-
PHV-231	Fri 11/24	00:00	16.40	-	-	-	-	0.71	-	-	-	-	-	88.3	13.0	-	-	-	-
Averages			14.53	-	-	-	-	0.66	-	-	-	-	-	89.1	10.7	-	-	-	-
VLP, 20 ft/sec, 1700 gpm																			
PHV-228R	Fri 11/24	02:00	13.38	-	-	-	-	0.68	-	-	-	-	-	88.7	10.0	-	-	-	-
PHV-228R	Fri 11/24	04:00	12.43	-	-	-	-	0.71	-	-	-	-	-	88.3	9.6	-	-	-	-
Averages			12.91	-	-	-	-	0.69	-	-	-	-	-	88.5	9.8	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																			
PHV-277	Fri 11/24	06:00	12.90	-	-	-	-	0.67	-	-	-	-	-	88.9	9.5	-	-	-	-
PHV-277	Fri 11/24	08:00	11.64	-	-	-	-	0.67	-	-	-	-	-	88.9	8.5	-	-	-	-
PHV-277	Fri 11/24	08:03	11.74	-	-	-	-	0.67	-	-	-	-	-	88.9	8.6	82.42	-	-	-
Averages			12.09	-	-	-	-	0.67	-	-	-	-	-	88.9	8.8	82.42	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

Test	Date	Time	FLRT	Ca	Mg	SO3	SO4	CO3	Inerts	Wt	Mol	Solids	Ox.	Util.	Ox.	Util.	CO3-	L.S.	CPVFC	Thickener Unit Area (ft2/upd)	Initial Wt%	Final Settled Wt%	Form Filtration Rate lb/hr*sqft
			Wt% Solids							Solids Closure (%)	Solids Closure (%)						Est. Util. (%)						
PHV-278	Fri 11/24	10:00	11.12	-	-	-	-	0.66	-	-	-	-	-	-	-	-	89.1	7.9	-	-	-	-	-
PHV-278	Fri 11/24	10:35	15.04	-	-	-	-	0.50	-	-	-	-	-	-	-	-	91.6	8.3	-	-	-	-	-
PHV-278	Fri 11/24	12:00	11.66	-	-	-	-	0.58	-	-	-	-	-	-	-	-	90.3	7.3	-	-	-	-	-
Averages			12.61	-	-	-	-	0.58	-	-	-	-	-	-	-	-	90.3	7.9	-	-	-	-	-
<i>VLP, 20 ft/sec, 1300 gpm</i>																							
PHV-279*	Fri 11/24	14:00	12.11	-	-	-	-	0.66	-	-	-	-	-	-	-	-	89.1	8.7	-	-	-	-	-
PHV-279*	Fri 11/24	16:00	12.87	-	-	-	-	0.54	-	-	-	-	-	-	-	-	91.0	7.6	-	-	-	-	-
PHV-279	Fri 11/24	18:00	12.07	-	-	-	-	0.43	-	-	-	-	-	-	-	-	92.8	5.6	-	-	-	-	-
PHV-279	Fri 11/24	20:00	11.44	-	-	-	-	0.34	-	-	-	-	-	-	-	-	94.2	4.2	-	-	-	-	-
Averages			11.76	-	-	-	-	0.39	-	-	-	-	-	-	-	-	93.5	4.9	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																							
PHV-280	Fri 11/24	22:00	12.39	-	-	-	-	0.42	-	-	-	-	-	-	-	-	92.9	5.7	-	-	-	-	-
PHV-280*	Sat 11/25	00:00	11.63	-	-	-	-	0.48	-	-	-	-	-	-	-	-	91.9	6.1	-	-	-	-	-
Averages			12.01	-	-	-	-	0.45	-	-	-	-	-	-	-	-	92.4	5.9	-	-	-	-	-
<i>VLP, 10 ft/sec, 1300 gpm</i>																							
PHV-281	Sat 11/25	02:00	11.47	-	-	-	-	0.48	-	-	-	-	-	-	-	-	91.9	6.0	-	-	-	-	-
PHV-281	Sat 11/25	04:00	12.02	-	-	-	-	0.42	-	-	-	-	-	-	-	-	92.9	5.5	-	-	-	-	-
Averages			11.75	-	-	-	-	0.45	-	-	-	-	-	-	-	-	92.4	5.7	-	-	-	-	-
<i>VLP, 10 ft/sec, 1700 gpm</i>																							
PHV-282	Sat 11/25	06:00	16.85	-	-	-	-	0.43	-	-	-	-	-	-	-	-	92.8	8.1	-	-	-	-	-
PHV-282	Sat 11/25	08:00	12.59	-	-	-	-	0.49	-	-	-	-	-	-	-	-	91.8	6.7	-	-	-	-	-
Averages			14.72	-	-	-	-	0.46	-	-	-	-	-	-	-	-	92.3	7.4	-	-	-	-	-
<i>VLP, 15 ft/sec, 1700 gpm</i>																							
PHV-283*	Sat 11/25	10:00	12.99	-	-	-	-	0.48	-	-	-	-	-	-	-	-	91.9	6.8	-	-	-	-	-
PHV-283	Sat 11/25	11:45	13.37	-	-	-	-	0.38	-	-	-	-	-	-	-	-	93.6	5.6	-	-	-	-	-
PHV-283	Sat 11/25	12:00	13.00	-	-	-	-	0.35	-	-	-	-	-	-	-	-	94.1	5.0	-	-	-	-	-
Averages			13.19	-	-	-	-	0.37	-	-	-	-	-	-	-	-	93.8	5.3	-	-	-	-	-
<i>VLP, 20 ft/sec, 1700 gpm</i>																							
PHV-284*	Sat 11/25	14:00	12.51	-	-	-	-	0.32	-	-	-	-	-	-	-	-	94.6	4.4	-	-	-	-	-
PHV-284*	Sat 11/25	14:10	13.31	-	-	-	-	0.39	-	-	-	-	-	-	-	-	93.4	5.7	-	-	-	-	-
PHV-284	Sat 11/25	16:00	12.76	-	-	-	-	0.38	-	-	-	-	-	-	-	-	93.6	5.3	-	-	-	-	-
PHV-284	Sat 11/25	18:00	12.29	-	-	-	-	0.36	-	-	-	-	-	-	-	-	93.9	4.8	-	-	-	-	-
PHV-284	Sat 11/25	20:00	12.75	-	-	-	-	0.35	-	-	-	-	-	-	-	-	94.1	4.9	-	-	-	-	-
Averages			12.60	-	-	-	-	0.36	-	-	-	-	-	-	-	-	93.8	5.0	-	-	-	-	-
<i>VLP, 17.5 ft/sec, 1700 gpm</i>																							
PHV-285	Sat 11/25	22:00	12.65	-	-	-	-	0.34	-	-	-	-	-	-	-	-	94.2	4.7	-	-	-	-	-
PHV-285	Sun 11/26	00:00	15.74	-	-	-	-	0.32	-	-	-	-	-	-	-	-	94.6	5.6	-	-	-	-	-
Averages			14.20	-	-	-	-	0.33	-	-	-	-	-	-	-	-	94.4	5.2	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**Pilot FLRT Solid Analytical Summary:
PHV Phase II Test Block**

			FLRT						Wt		Mol	Solids		IR		CO3-	L.S.	Thickener		Form		
Test	Date	Time	Wt% Solids	Ca (mmol/g)	Mg (mmol/g)	SO3 (mmol/g)	SO4 (mmol/g)	CO3 (mmol/g)	Inerts (wt%)	Closure (%)	Closure (%)	Ox. (%)	Util. (%)	Ox. (%)	Util. (%)	Util. (%)	Loading (g/L)	CPFC Wt%	Unit Area (ft2/tpd)	Initial Wt%	Final Settled Wt%	Filtration Rate lb/hr*sqft
VLP, 10 ft/sec, 1700 gpm																						
PHV-286	Sun 11/26	02:00	16.24	-	-	-	-	0.28	-	-	-	-	-	-	-	95.2	5.1	-	-	-	-	-
PHV-286	Sun 11/26	04:00	13.79	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.4	-	-	-	-	-
		Averages	15.02	-	-	-	-	0.29	-	-	-	-	-	-	-	95.1	4.7	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																						
PHV-287	Sun 11/26	06:00	15.14	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	5.4	-	-	-	-	-
PHV-287*	Sun 11/26	08:00	11.83	-	-	-	-	0.22	-	-	-	-	-	-	-	96.2	2.8	-	-	-	-	-
		Averages	15.14	-	-	-	-	0.32	-	-	-	-	-	-	-	94.6	5.4	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																						
PHV-288*	Sun 11/26	10:00	11.4	-	-	-	-	0.17	-	-	-	-	-	-	-	97.1	2.1	82.60	-	-	-	-
PHV-288*	Sun 11/26	12:00	10.97	-	-	-	-	0.23	-	-	-	-	-	-	-	96.1	2.7	-	-	-	-	-
PHV-288	Sun 11/26	14:00	11.02	-	-	-	-	0.20	-	-	-	-	-	-	-	96.6	2.4	-	-	-	-	-
PHV-288	Sun 11/26	16:00	11.65	-	-	-	-	0.18	-	-	-	-	-	-	-	96.9	2.3	-	-	-	-	-
		Averages	11.34	-	-	-	-	0.19	-	-	-	-	-	-	-	96.6	2.4	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																						
PHV-289*	Sun 11/26	18:00	13.77	-	-	-	-	0.19	-	-	-	-	-	-	-	96.7	2.9	-	-	-	-	-
PHV-289*	Sun 11/26	20:00	11.97	-	-	-	-	0.26	-	-	-	-	-	-	-	95.6	3.4	-	-	-	-	-
PHV-289	Sun 11/26	22:00	12.60	-	-	-	-	0.33	-	-	-	-	-	-	-	94.4	4.5	-	-	-	-	-
PHV-289	Mon 11/27	00:00	12.73	-	-	-	-	0.38	-	-	-	-	-	-	-	93.6	5.3	-	-	-	-	-
		Averages	12.67	-	-	-	-	0.36	-	-	-	-	-	-	-	94.0	4.9	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																						
PHV-290	Mon 11/27	02:00	12.65	-	-	-	-	0.24	-	-	-	-	-	-	-	95.8	3.4	-	-	-	-	-
PHV-290*	Mon 11/27	04:00	11.92	-	-	-	-	0.14	-	-	-	-	-	-	-	97.6	1.8	-	-	-	-	-
		Averages	12.65	-	-	-	-	0.24	-	-	-	-	-	-	-	95.8	3.4	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**VME Carryover Measurement Summary:
PHV Phase II Test Block**

Estimated Carryover Rates																		
Overall HME Collection									Wash Water Fractions			FLRT Fractions			Using Wash Fractions		Using FLRT Fract.	
Test	Date	Time	Filter	Direct	St. Dev.	Total	Number	Coeff.	Mg	Na	Average	Mg	Na	Average	Direct	Total	Direct	Hourly
			Cake	HMEC	Direct	Tank									of Data	of Determ.	HMEC	Tank
			Wt%	(gpm)	Rate	(gpm)	Points	R2	(%)	(%)	(%)	(%)	(%)	(%)	Rate	Rate	Rate	Rate
/----- (gpm/ft2) E4 -----\																		
Baseline, 20 ft/s, 1700 gpm																		
PHV-200X*	Tue 10/24	12:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X*	Wed 10/25	07:19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Wed 10/25	13:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Wed 10/25	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-200X	Thu 10/26	07:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/s, 650 gpm																		
PHV-211X	Thu 10/26	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211X	Thu 10/26	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 20 ft/s, 1300 gpm																		
PHV-204*	Thu 10/26	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	14:10	86	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	15:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	16:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204*	Thu 10/26	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	17:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204	Thu 10/26	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 17.5 ft/s, 1300 gpm																		
PHV-205	Thu 10/26	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205	Fri 10/27	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 15 ft/s, 1300 gpm																		
PHV-206	Fri 10/27	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-206	Fri 10/27	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/s, 1300 gpm																		
PHV-207	Fri 10/27	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-207	Fri 10/27	07:59	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-207	Fri 10/27	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 17.5 ft/s, 1300 gpm																		
PHV-205R	Fri 10/27	09:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	11:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205R	Fri 10/27	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

															Estimated Carryover Rates									
Overall HME Collection															Wash Water Fractions			FLRT Fractions			Using Wash Fractions		Using FLRT Fract.	
Test	Date	Time	Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Direct	Total	Direct	Hourly						
				HMEC Rate (gpm)	Rate (gpm)	Tank Rate (gpm)									HMEC Rate (gpm)	Tank Rate (gpm)	HMEC Rate (gpm)	Tank Rate (gpm)						
Baseline, 10 ft/s, 1700 gpm																								
PHV-203*	Fri 10/27	14:06	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-203*	Fri 10/27	15:55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-203	Fri 10/27	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-203	Fri 10/27	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-203	Fri 10/27	18:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-203	Fri 10/27	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 15 ft/s, 1700 gpm																								
PHV-202	Fri 10/27	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-202	Sat 10/28	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 17.5 ft/s, 1700 gpm																								
PHV-201	Sat 10/28	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-201	Sat 10/28	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 20 ft/s, 1700 gpm																								
PHV-200	Sat 10/28	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-200	Sat 10/28	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-200	Sat 10/28	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 17.5 ft/s, 1700 gpm																								
PHV-201R	Sat 10/28	08:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-201R	Sat 10/28	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-201R	Sat 10/28	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-201R	Sat 10/28	12:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 17.5 ft/s, 650 gpm																								
PHV-209	Sat 10/28	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-209	Sat 10/28	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 20 ft/s, 650 gpm																								
PHV-208	Sat 10/28	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-208	Sat 10/28	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 15 ft/s, 650 gpm																								
PHV-210	Sat 10/28	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-210	Sun 10/29	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 10 ft/s, 650 gpm																								
PHV-211	Sun 10/29	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
PHV-211	Sun 10/29	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Baseline, 20 ft/s, 650 gpm																								
PHV-208R	Sun 10/29	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
X = Data Collected During Startup Conditions																								

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

Test	Date	Time	Overall HME Collection						Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
			Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Using Wash Fractions		Using FLRT Fract.	
				HMEC Rate (gpm)	Direct Rate (gpm)	Tank Rate (gpm)									Direct HMEC Rate	Total Tank Rate (gpm/ft2)	Direct HMEC Rate	Hourly Tank Rate
PHV-208R	Sun 10/29	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Carryover, Muniers, 15 fps, 1700</i>																		
PHV-214*	Sun 10/29	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	13:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214*	Sun 10/29	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Sun 10/29	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	07:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	08:00	-	.0412	.0023	.0366	24	.9952	23	20	22	10	9	10	5.02	4.46	2.25	2.00
PHV-214	Mon 10/30	09:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-214	Mon 10/30	10:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	0.0	0.0	0.0	24.0	1.0	23.0	20.2	21.6	10.2	9.1	9.7	5.02	4.46	2.25	2.00
<i>Carryover, M, 17.5 fps, 1700</i>																		
PHV-213*	Mon 10/30	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	13:55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213*	Mon 10/30	15:40	-	-	-	-	-	-	22	21	22	-	-	-	-	-	-	-
PHV-213	Mon 10/30	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Mon 10/30	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	06:30	-	.0330	.0027	.0341	21	.9899	28	28	28	13	13	13	5.22	5.39	2.40	2.48
PHV-213	Tue 10/31	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-213	Tue 10/31	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	.0330	.0027	.0341	21	.9899	27.80	28.23	28.02	12.78	13.00	12.89	5.22	5.39	2.40	2.48
<i>Carryover, M, 20 fps, 1700 gpm</i>																		
PHV-212*	Tue 10/31	14:00	-	.0729	.0231	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212*	Tue 10/31	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Tue 10/31	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-212	Wed 11/01	07:40	-	.0922	.0235	.0791	23	.9994	138	128	133	61	60	61	69.24	59.40	31.57	27.08
Averages			-	.0826	.0233	.0791	23	0.999	138	128	133	61	60	61	69.24	59.40	31.57	27.08
<i>Carryover, M, 20 fps, 1300 gpm</i>																		
PHV-215*	Wed 11/01	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

Estimated Carryover Rates																		
Overall HME Collection									Wash Water Fractions			FLRT Fractions			Using Wash Fractions		Using FLRT Fract.	
Test	Date	Time	Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Direct	Total	Direct	Hourly
				HMEC Rate (gpm)	Rate (gpm)	Tank Rate (gpm)									HMEC Rate	Tank Rate	HMEC Rate	Tank Rate
/----- (gpm/ft2) E4 -----\																		
PHV-215*	Wed 11/01	15:45	-	.0816	-	-	-	-	151	149	150	-	-	-	69.04	-	-	-
PHV-215*	Wed 11/01	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215*	Wed 11/01	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	07:20	-	.0814	.0161	.0790	23	.9981	149	145	147	68	68	68	67.52	65.53	31.24	30.32
PHV-215	Thu 11/02	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-215	Thu 11/02	09:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	.0814	.0161	.0790	23	.9981	149	145	147	68	68	68	67.52	65.53	31.24	30.32
Baseline, 13.5 ft/sec, 1300 gpm																		
PHV-264	Thu 11/02	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-264	Thu 11/02	13:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 10 ft/sec, 650 gpm																		
PHV-211R	Thu 11/02	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	15:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	17:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-211R	Thu 11/02	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 15 ft/sec, 650 gpm																		
PHV-210R	Thu 11/02	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210R	Fri 11/03	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 11.5 ft/sec, 1300 gpm																		
PHV-265	Fri 11/03	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265	Fri 11/03	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Baseline, 20 ft/sec, 650 gpm																		
PHV-208RR*	Fri 11/03	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR*	Fri 11/03	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	09:00	-	.0385	.0121	-	-	-	67	64	65	26	25	26	14.23	-	5.58	-
PHV-208RR	Fri 11/03	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	10:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-208RR	Fri 11/03	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	.0385	.0121	-	-	-	67	64	65	26	25	26	14.23	-	5.58	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**VME Carryover Measurement Summary:
PHV Phase II Test Block**

Test	Date	Time	Overall HME Collection						Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
			Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Using Wash Fractions		Using FLRT Fract.	
				HMEC Rate (gpm)	Direct Rate (gpm)	Tank Rate (gpm)									Direct HMEC Rate	Total Tank Rate	Direct HMEC Rate	Hourly Tank Rate
															/----- (gpm/ft2) E4 -----\			
<i>Baseline, 15 ft/sec, 650 gpm</i>																		
PHV-210RR*	Fri 11/03	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	15:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR*	Fri 11/03	16:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR	Fri 11/03	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-210RR	Fri 11/03	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 15 ft/sec, 1300 gpm</i>																		
PHV-206R	Fri 11/03	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-206R	Sat 11/04	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 11.5 ft/sec, 1300 gpm</i>																		
PHV-265R	Sat 11/04	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265R	Sat 11/04	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-265R	Sat 11/04	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/sec, 1300 gpm</i>																		
PHV-204R	Sat 11/04	07:22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204R	Sat 11/04	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204R	Sat 11/04	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-204R	Sat 11/04	11:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/sec, 1300 gpm</i>																		
PHV-205RR	Sat 11/04	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR	Sat 11/04	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sat 11/04	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sat 11/04	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sat 11/04	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-205RR*	Sun 11/05	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

			Overall HME Collection						Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
			Filter	Direct	St. Dev.	Total	Number	Coeff.							Using Wash Fractions		Using FLRT Fract.	
			Cake	HMEC	Direct	Tank			of Data	Mg	Na	Average	Mg	Na	Average	Direct	Total	Direct
Test	Date	Time	Rate	Rate	Rate	Rate	Points	of Determ.	(%)	(%)	Na/Mg	(%)	(%)	Na/Mg	HMEC	Tank	HMEC	Tank
			Wt%	(gpm)	(gpm)	(gpm)		R2			(%)			(%)	Rate	Rate	Rate	Rate
			/----- (gpm/ft2) E4 -----\															
DBA, 10 ft/sec, 650 gpm																		
PHV-221*	Sun 11/05	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	10:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	11:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221*	Sun 11/05	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Sun 11/05	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	07:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	10:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-221	Mon 11/06	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, 15 ft/sec, 650 gpm																		
PHV-220*	Mon 11/06	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	14:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220*	Mon 11/06	15:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	16:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-220	Mon 11/06	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, 20 ft/sec, 650 gpm																		
PHV-218	Mon 11/06	17:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218	Mon 11/06	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218	Mon 11/06	19:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	21:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-218*	Mon 11/06	21:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 10 ft/sec, 650 gpm																		
PHV-266*	Thu 11/09	00:01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266*	Thu 11/09	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	06:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	09:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	10:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-266	Thu 11/09	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

DBA, Tan., 15 ft/sec, 650 gpm
X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**VME Carryover Measurement Summary:
PHV Phase II Test Block**

														Estimated Carryover Rates				
Overall HME Collection									Wash Water Fractions			FLRT Fractions			Using Wash Fractions		Using FLRT Fract.	
Test	Date	Time	Filter	Direct	St. Dev.	Total	Number	Coeff.	Mg	Na	Average	Mg	Na	Average	Direct	Total	Direct	Hourly
			Cake	HMEC	Direct	Tank									of Data	of Determ.	HMEC	Tank
			Rate	Rate	Rate	Rate	Points	R2	(%)	(%)	(%)	(%)	(%)	(%)	Rate	Rate	Rate	Rate
/----- (gpm/ft2) E4 -----\																		
PHV-267	Thu 11/09	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267	Thu 11/09	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 20 ft/sec, 650 gpm																		
PHV-268	Thu 11/09	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268	Thu 11/09	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan.,17.5 ft/sec, 650 gpm																		
PHV-269	Thu 11/09	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-269	Fri 11/10	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 20 ft/sec, 1300 gpm																		
PHV-270	Fri 11/10	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-270	Fri 11/10	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan.,20 ft/sec, 1700 gpm																		
PHV-271	Fri 11/10	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-271	Fri 11/10	07:55	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-271	Fri 11/10	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan.,20 ft/sec, 650 gpm																		
PHV-268R	Fri 11/10	09:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268R	Fri 11/10	11:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-268R	Fri 11/10	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DBA, Tan., 15 ft/sec, 650 gpm																		
PHV-267R	Fri 11/10	13:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	15:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	16:07	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-267R	Fri 11/10	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

Overall HME Collection										FLRT Fractions										Estimated Carryover Rates									
Test	Date	Time	Wt%	Filter	Direct	HM/EC	St. Dev.	Direct	Total	Number of Data Points	Coeff. of Determ. R ²	Mg	Na	Average Na/Mg (%)	Mg	Na	Average Na/Mg (%)	HM/EC Rate	HM/EC Tank Total Rate	Direct Hourly Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate	Using FLRT Fract. Rate
Tan, 17.5 fl/sec, 1300 gpm																													
PHV-245*	Sat 11/11	07:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	08:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245*	Sat 11/11	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245	Sat 11/11	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 20 fl/sec, 1300 gpm																													
PHV-244	Sat 11/12	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-244	Sun 11/12	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 15 fl/sec, 1300 gpm																													
PHV-246	Sun 11/12	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-246	Sun 11/12	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 10 fl/sec, 1300 gpm																													
PHV-247	Sun 11/12	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-247	Sun 11/12	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 17.5 fl/sec, 1300 gpm																													
PHV-245R	Sun 11/12	10:23	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-245R	Sun 11/12	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 17.5 fl/sec, 650 gpm																													
PHV-249	Sun 11/12	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249	Sun 11/12	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-249	Sun 11/12	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 20 fl/sec, 650 gpm																													
PHV-248	Sun 11/12	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-248	Sun 11/12	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													
Tan, 15 fl/sec, 650 gpm																													
PHV-250	Sun 11/12	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-250	Mon 11/13	00:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages																													

X = Data Collected During Startup Conditions
* = Data Not Included in Averages

**VME Carryover Measurement Summary:
PHV Phase II Test Block**

Overall HME Collection										Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
Test	Date	Time	Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Using Wash Fractions		Using FLRT Fract.		
				HMEC	Direct	Tank									Direct	Total	Direct	Hourly	
				Rate (gpm)	Rate (gpm)	Rate (gpm)									HMEC Rate	Tank Rate	HMEC Rate	Tank Rate	
/----- (gpm/ft2) E4 -----\																			
Tan., 10 ft/sec, 650 gpm																			
PHV-251	Mon 11/13	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-251	Mon 11/13	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 20 ft/sec, 650 gpm																			
PHV-248R	Mon 11/13	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-248R	Mon 11/13	06:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-248R	Mon 11/13	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 20 ft/sec, 1700 gpm																			
PHV-240	Mon 11/13	09:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-240	Mon 11/13	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-240	Mon 11/13	11:15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-240	Mon 11/13	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 17.5 ft/sec, 1700 gpm																			
PHV-241	Mon 11/13	13:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-241	Mon 11/13	13:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-241	Mon 11/13	14:40	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-241	Mon 11/13	16:05	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 15 ft/sec, 1700 gpm																			
PHV-242	Mon 11/13	16:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-242	Mon 11/13	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-242	Mon 11/13	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 10 ft/sec, 1700 gpm																			
PHV-243	Mon 11/13	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-243	Tue 11/14	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 20 ft/sec, 1700 gpm																			
PHV-240R	Tue 11/14	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-240R	Tue 11/14	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 20 ft/sec, 1300 gpm																			
PHV-244R	Tue 11/14	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-244R	Tue 11/14	07:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-244R	Tue 11/14	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

X = Data Collected During Startup Conditions

• = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

PHV Phase II Test Data																			
Overall HME Collection										Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
Test	Date	Time	Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Using Wash Fractions		Using FLRT Fract.		
				HMEC Rate (gpm)	Direct Rate (gpm)	Tank Rate (gpm)									Direct HMEC Rate	Total Tank Rate (gpm/ft2)	Direct HMEC Rate	Hourly Tank Rate	
Tan., 15 ft/sec, 1300 gpm																			
PHV-246R	Tue 11/14	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-246R	Tue 11/14	10:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-246R	Tue 11/14	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 10 ft/sec, 1300 gpm																			
PHV-247R*	Tue 11/14	12:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-247R	Tue 11/14	13:50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-247R	Tue 11/14	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-247R	Tue 11/14	15:25	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-247R	Tue 11/14	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 17.5 ft/sec, 650 gpm																			
PHV-249R	Tue 11/14	17:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-249R	Tue 11/14	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-249R	Tue 11/14	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 15 ft/sec, 650 gpm																			
PHV-250R	Tue 11/14	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-250R	Wed 11/15	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tan., 17.5 ft/sec, 1300 gpm																			
PHV-245RR	Wed 11/15	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-245RR	Wed 11/15	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Carryover, 15 ft/s, 1700 gpm																			
PHV-224	Thu 11/16	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-224	Thu 11/16	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-224	Thu 11/16	08:00	-	.0317	.0022	-	-	-	76	74	75	34	34	34	13.37	-	6.13	-	
PHV-224	Thu 11/16	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-224	Thu 11/16	14:15	-	.0305	.0038	-	-	-	63	62	62	27	26	26	10.72	-	4.53	-	
PHV-224	Thu 11/16	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-224	Thu 11/16	16:50	-	.0291	.0023	.0339	22	.9481	79	76	78	34	33	33	12.75	14.86	5.49	6.40	
Averages			-	.0304	.0028	.0339	22	.9481	72	71	72	32	31	31	12.28	14.86	5.38	6.40	
Carryover, 17.5 ft/s, 1700 gpm																			
PHV-223*	Thu 11/16	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-223	Fri 11/17	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-223	Fri 11/17	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-223	Fri 11/17	08:25	-	.0253	.0016	-	-	-	44	44	44	19	20	19	6.25	-	2.75	-	
PHV-223	Fri 11/17	11:20	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-223	Fri 11/17	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
PHV-223	Fri 11/17	14:09	-	.0210	.0049	.0278	23	.9580	27	28	28	12	12	12	3.31	4.38	1.44	1.90	
PHV-223	Fri 11/17	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Averages			-	.0232	.0033	.0278	23	.9580	36	36	36	16	16	16	4.78	4.38	2.09	1.90	
Carryover, 20 ft/s, 1700 gpm																			
PHV-222	Fri 11/17	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

Test	Date	Time	Overall HME Collection						Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
			Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Using Wash Fractions		Using FLRT Fract.	
				HMEC Rate (gpm)	Direct Rate (gpm)	Tank Rate (gpm)									Direct HMEC Rate	Total Tank Rate (gpm/ft2) E4	Direct HMEC Rate	Hourly Tank Rate
PHV-222	Sat 11/18	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	07:40	-	.1556	.0898	-	-	-	175	168	172	82	81	81	150.68	-	71.55	-
PHV-222	Sat 11/18	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-222	Sat 11/18	10:30	-	.1450	.0401	.1240	23	.9770	161	162	161	72	73	73	132.07	112.94	59.49	50.87
PHV-222	Sat 11/18	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	.1503	.0650	.1240	23	.9770	168	165	166	77	77	77	141.37	112.94	65.52	50.87
<i>Carryover, 20 ft/s, 1300 gpm</i>																		
PHV-225	Sat 11/18	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	11:12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-225	Sun 11/19	12:00	-	.1874	.0973	-	-	-	161	159	160	74	74	74	136.49	-	63.24	-
PHV-225	Sun 11/19	14:00	-	.1512	.0414	.1443	23	.9916	198	194	196	88	88	88	167.11	159.48	75.17	71.74
PHV-225	Sun 11/19	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	.1693	.0694	.1443	23	.9916	180	176	178	81	81	81	151.80	159.48	69.21	71.74
<i>Carryover, 15 ft/s, 1700 gpm</i>																		
PHV-224R	Sun 11/19	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-224R	Mon 11/20	08:00	-	.0299	.0017	-	-	-	52	48	50	23	22	23	8.44	-	3.86	-
PHV-224R	Mon 11/20	10:30	-	.0308	.0028	.0315	16	.9686	64	60	62	28	26	27	10.74	10.98	4.63	4.73
PHV-224R	Mon 11/20	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	.0304	.0023	.0315	16	.9686	58	54	56	25	24	25	9.59	10.98	4.24	4.73
<i>Baseline, 15 ft/sec, 1300 gpm</i>																		
PHV-272	Mon 11/20	13:04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	14:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-272	Mon 11/20	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 20 ft/sec, 1300 gpm</i>																		
PHV-273	Mon 11/20	17:30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273	Mon 11/20	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-273*	Mon 11/20	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>Baseline, 17.5 ft/sec, 1300 gpm</i>																		
PHV-274	Mon 11/20	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-274	Tue 11/21	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

Estimated Carryover Rates

X = Data Collected During Startup Conditions
• = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

															Estimated Carryover Rates			
Overall HME Collection									Wash Water Fractions			FLRT Fractions			Using Wash Fractions		Using FLRT Fract.	
Test	Date	Time	Filter	Direct	St. Dev.	Total	Number	Coeff.	Mg	Na	Average	Mg	Na	Average	Direct	Total	Direct	Hourly
			Cake	HMEC	Direct	Tank									of Data	of Determ.	HMEC	Tank
			Wt%	(gpm)	(gpm)	(gpm)	Points	R2	(%)	(%)	(%)	(%)	(%)	(%)	Rate	Rate	Rate	Rate
/----- (gpm/ft2) E4 -----\																		
VLP, 20 ft/sec, 650 gpm																		
PHV-236	Wed 11/22	17:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236	Wed 11/22	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236	Wed 11/22	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 ft/sec, 650 gpm																		
PHV-237	Wed 11/22	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-237	Thu 11/23	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 650 gpm																		
PHV-239	Thu 11/23	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-239	Thu 11/23	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 650 gpm																		
PHV-236R	Thu 11/23	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-236R	Thu 11/23	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 1700 gpm																		
PHV-228	Thu 11/23	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-228	Thu 11/23	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 17.5 ft/sec, 1700 gpm																		
PHV-229	Thu 11/23	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-229	Thu 11/23	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1700 gpm																		
PHV-230	Thu 11/23	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-230	Thu 11/23	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1700 gpm																		
PHV-231	Thu 11/23	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-231	Fri 11/24	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 20 ft/sec, 1700 gpm																		
PHV-228R	Fri 11/24	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-228R	Fri 11/24	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-277	Fri 11/24	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-277	Fri 11/24	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-277	Fri 11/24	08:03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

VLP, 10 ft/sec, 1300 gpm
X = Data Collected During Startup Conditions

* = Data Not Included in Averages

VME Carryover Measurement Summary: PHV Phase II Test Block

Test	Date	Time	Overall HME Collection						Wash Water Fractions			FLRT Fractions			Estimated Carryover Rates			
			Filter Cake Wt%	Direct	St. Dev.	Total	Number of Data Points	Coeff. of Determ. R2	Mg (%)	Na (%)	Average Na/Mg (%)	Mg (%)	Na (%)	Average Na/Mg (%)	Using Wash Fractions		Using FLRT Fract.	
				HMEC	Direct	Tank									Direct	Total	Direct	Hourly
				Rate (gpm)	Rate (gpm)	Rate (gpm)									HMEC Rate	Tank Rate (gpm/ft2) E4	HMEC Rate	Tank Rate
PHV-278	Fri 11/24	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-278	Fri 11/24	10:35	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-278	Fri 11/24	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1300 gpm</i>																		
PHV-279*	Fri 11/24	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279*	Fri 11/24	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279	Fri 11/24	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-279	Fri 11/24	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1300 gpm</i>																		
PHV-280	Fri 11/24	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-280*	Sat 11/25	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1300 gpm</i>																		
PHV-281	Sat 11/25	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-281	Sat 11/25	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 10 ft/sec, 1700 gpm</i>																		
PHV-282	Sat 11/25	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-282	Sat 11/25	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 15 ft/sec, 1700 gpm</i>																		
PHV-283*	Sat 11/25	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-283	Sat 11/25	11:45	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-283	Sat 11/25	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 20 ft/sec, 1700 gpm</i>																		
PHV-284*	Sat 11/25	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284*	Sat 11/25	14:10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-284	Sat 11/25	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<i>VLP, 17.5 ft/sec, 1700 gpm</i>																		
PHV-285	Sat 11/25	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-285	Sun 11/26	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

**VME Carryover Measurement Summary:
PHV Phase II Test Block**

														Estimated Carryover Rates				
Overall HME Collection									Wash Water Fractions			FLRT Fractions			Using Wash Fractions		Using FLRT Fract.	
Test	Date	Time	Filter	Direct	St. Dev.	Total	Number	Coeff.	Mg	Na	Average	Mg	Na	Average	Direct	Total	Direct	Hourly
			Cake	HMEC	Direct	Tank									Rate	of Data	of Determ.	Rate
/----- (gpm/ft2) E4 -----\																		
VLP, 10 ft/sec, 1700 gpm																		
PHV-286	Sun 11/26	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-286	Sun 11/26	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																		
PHV-287	Sun 11/26	06:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-287*	Sun 11/26	08:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-288*	Sun 11/26	10:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288*	Sun 11/26	12:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288	Sun 11/26	14:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-288	Sun 11/26	16:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 10 ft/sec, 1300 gpm																		
PHV-289*	Sun 11/26	18:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289*	Sun 11/26	20:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289	Sun 11/26	22:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-289	Mon 11/27	00:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VLP, 15 ft/sec, 1300 gpm																		
PHV-290	Mon 11/27	02:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PHV-290*	Mon 11/27	04:00	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Averages			-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

X = Data Collected During Startup Conditions

* = Data Not Included in Averages

ECTC COSPONSORS DISTRIBUTION

Ms. Debra DiMeo (10)
Empire State Electric Energy Res. Corp.
1515 Broadway
New York, NY 10036
Ph. (212) 302-1212
Fax: (212) 302-1377

Mr. Michael Perlsweig
U.S. Department of Energy
FE-22/GTN
Washington, DC 20545
Ph: (202) 353-4399
Fax: (202) 353-4399

Mr. John E. Smigelski (10)
New York State Electric & Gas
Corporate Drive, Kirkwood Ind. Park
P. O. Box 5224
Binghamton, NY 13902-5224
Ph: (607) 762-8688
Fax: (607) 762-8457

Ms. JoAnn C. Zysk (7)
U.S. Department of Energy
Pittsburgh Energy Technology Center
P. O. Box 10940, MS 900-33
Pittsburgh, PA 15236
Ph: (412) 892-6200
Fax: (412) 892-6216

Dr. Gerald Janik
New York State Electric & Gas
Corporate Drive, Kirkwood Ind. Park
P. O. Box 5224
Binghamton, NY 13902-5224
Ph: (607) 762-4318
Fax: (607) 762-8457

Mr. Jonas S. Klingspor
ABB Environmental Systems
31 Inverness Center Parkway
Birmingham, AL 35243
Ph: (205) 995-5360
Fax: (205) 995-5364

Mr. Takeo Hirai
Electric Power Development Co., Ltd
15-1, Ginza 6-Chome, Chuo-ku
Tokyo, 104 JAPAN
Ph: (81) 3-3546-9404
Fax: (81) 3-3546-9482

EPRI DISTRIBUTION

G. Andes
W. Chow

R. Glover
M. Miller

R. Rhudy
G. Offen

G. Preston