

ATTACHMENT B

Control Technology Plan for Bunge's Cairo, Illinois Conventional Soybean Plant

May, 2006

CONTENTS

SECTION

- 1.0 Introduction
- 2.0 Program Summary
- 3.0 Process Flow Diagrams
- 4.0 Emission Units Requiring Pollution Control Equipment
- 5.0 Engineering Design Criteria for Pollution Control Equipment
- 6.0 Monitoring Parameters for Pollution Control Equipment
- 7.0 Emission Limits
- 8.0 Schedules for Emission Reduction Projects
- 9.0 Pollution Control Equipment Performance Test Schedule and Test Methods
- 10.0 Procedures for Optimization of Control Equipment and Setting Emission Limits

APPENDIX

- 1 Decision Tree for Phenix Technology Program

1.0 Introduction

This Control Technology Plan (CTP) is an Attachment to a Consent Decree signed by Bunge North America, Inc. (Bunge), the United States, and the State of Illinois, among others. This CTP describes the emission reduction program that Bunge shall implement at its conventional soybean extraction plant which it owns and operates in Cairo, Illinois (Cairo, Illinois Plant). This CTP contains:

- (a) Identification of all units to be controlled;
- (b) Engineering design criteria for all proposed controls;
- (c) Applicable emission limits for VOC, SO₂, and NO_x, based on Section 2.0 of this CTP;
- (d) Monitoring parameters for all control equipment;
- (e) A schedule for installation;
- (f) Identification of units to be emission tested and definition of the test methods that will be used; and
- (g) A procedure for setting emission limits following start-up of emissions control equipment.

2.0 Program Summary

Bunge shall implement a program with the goal of achieving a reduction of volatile organic compound (VOC) emissions, sulfur dioxide (SO₂), and nitrogen oxides (NO_x) from the soybean solvent extraction plant and associated boilers at the Cairo, Illinois Plant. Section 3.0 of this CTP includes the following flow diagrams:

Diagram 3.1 – General Process

Diagram 3.2 – Process Flow for Boiler

Diagram 3.3 – Process Flow for First Effect Evaporator

The VOC emission reduction component of this program consists of replacing the existing first effect evaporator with a new unit. The VOC emission limit will be established pursuant to Section 8.0 and Section 10.0 of this CTP.

The SO₂ and NO_x emission reduction components of this program consist of Bunge installing Phenix technology on Coal Boiler No. 1 at the Cairo, Illinois Plant. If the program reasonably meets the design criteria in Section 5.0 of this CTP, Bunge will operate Phenix technology on that coal boiler according to the schedule in Appendix 1 (Decision Tree). If the program does not meet the criteria in Section 5.0 of the CTP, Bunge must conduct engineering evaluations and, if appropriate, implement an alternative program, directed toward identifying an alternative technology that is technologically feasible and economically reasonable. If such an alternative technology is identified, and this alternative technology reasonably meets the design criteria specified in Section 5.0 of the CTP, then Bunge will install the alternative technology on one of its coal boilers according to the schedule outlined in Appendix 1 (Decision Tree). The emission reduction benefits from this alternative program will be addressed in the final SO₂ emission limit for the boiler, which will be established pursuant to Sections 7.0 and 10.0 of this CTP.

2.1. Evaluation Report: By no later than 27 months after lodging of the Consent Decree, Bunge shall submit a report to EPA and the Illinois Environmental Protection Agency (IEPA) evaluating the Phenix technology. The report shall include a determination whether the Phenix technology is capable of meeting the design criteria in Section 5.0 of this CTP. Specifically, the report shall include monitoring data, and all assumptions and calculations used to estimate the emission reduction benefit of the Phenix technology.

2.2 If EPA and IEPA determine that the Phenix technology meets the design criteria in Section 5.0 of this CTP, Bunge shall establish the design criteria targets as final emission limits for SO₂ and NO_x for Coal Boiler No. 1 not later than 30 months after lodging the Consent Decree.

2.3 If EPA and IEPA determine that the Phenix technology does not meet the design criteria in Section 5.0 of this CTP, Bunge shall submit:

(a). In the report required under Paragraph 2.1 of this CTP, or a separate report if Bunge requests and EPA approves an extension, an evaluation of the technical feasibility, estimated control efficiency, and cost-effectiveness of alternate technologies for controlling SO₂ and NO_x emissions from one of its coal-fired boilers; and

(b). In the report under Paragraph 2.1 of this CTP, Bunge shall report whether the Phenix technology is to remain in place, or be removed.

2.4 (a). Evaluation of Alternative Technologies: The evaluation of alternative technologies in the report required under Paragraph 2.3 shall include all potentially applicable technologies that are capable of reducing SO₂ and NO_x emissions from one of the coal boilers. The target for each technology must be an emission rate equal to or lower than the design criteria in Section 5.0 of this CTP, which is 0.90 lbs SO₂ /MMBtu and 0.25 lbs NO_x/MMBtu; however, the actual control efficiency will be based on the alternative technology evaluation, which includes technical and economic feasibility.

(b). Evaluation of Technical Feasibility: In its technical feasibility portion of the evaluation report required by Paragraph 2.3 of this CTP, Bunge shall include a detailed engineering analysis of each technology and focus on whether the technology can meet the design criteria specified in Section 5.0 of this CTP. In the engineering analysis, Bunge shall include, as appropriate, manufacturer's design specifications and design criteria, any data from pilot or full-scale implementations of the technology that are relevant to this proposed evaluation, and any estimates of emission reductions for each technology, including all calculations, assumptions and/or operating data used to estimate control efficiencies.

(c). Evaluation of Economic Feasibility: The cost effectiveness portion of the evaluation will be conducted on an annualized basis, in terms of cost per ton of reduced emissions, and submitted for EPA approval. The cost per ton estimates shall take into account all costs associated with the installation and implementation of the control measure in question, and may include costs associated with process and plant changes necessary to accommodate the control measures provided that the report also addresses any benefits to Bunge from such changes. The report shall include detailed supporting information for the determination of the cost-effectiveness including all calculations and assumptions. For purposes of the Consent Decree, a cost of less than \$5,000 per ton of SO₂ or \$5,000 per ton of NO_x removed/recovered is presumptively cost effective, and a cost of greater than \$10,000 per ton of SO₂ or \$10,000 per ton of NO_x removed/recovered is presumptively not cost effective.

2.5 If EPA, IEPA, and Bunge determine that one or more of the alternative technologies is technically feasible, and is cost effective, in its report required under Paragraphs 2.1 and 2.3 of this CTP, Bunge shall include a schedule with intermediate milestones for the installation of one of these alternative technologies on one of the coal boilers, to evaluate whether it is capable of meeting the design criteria in Section 5.0 of this CTP.

2.6 By no later than 7 months after installing the alternative technology, Bunge shall submit a report to EPA on this evaluation. The report shall include a determination on whether the alternative technology-equipped coal boiler is capable of meeting the design criteria in Section 5.0 of this CTP. If EPA and IEPA determine the alternative technology does not meet the design criteria in Section 5.0 of this CTP, Bunge, EPA, and IEPA will meet to discuss control alternatives prior to dispute resolution.

Appendix 1 contains a diagram that summarizes the decision process that Bunge, EPA, and IEPA will use to implement the Phenix technology program at the Cairo, Illinois Plant.

3.0 Process Flow Diagrams

Diagram 3.1 General Process

The following process block diagram presents a general representation of the solvent extraction process at a typical Bunge vegetable oil solvent extraction plant.

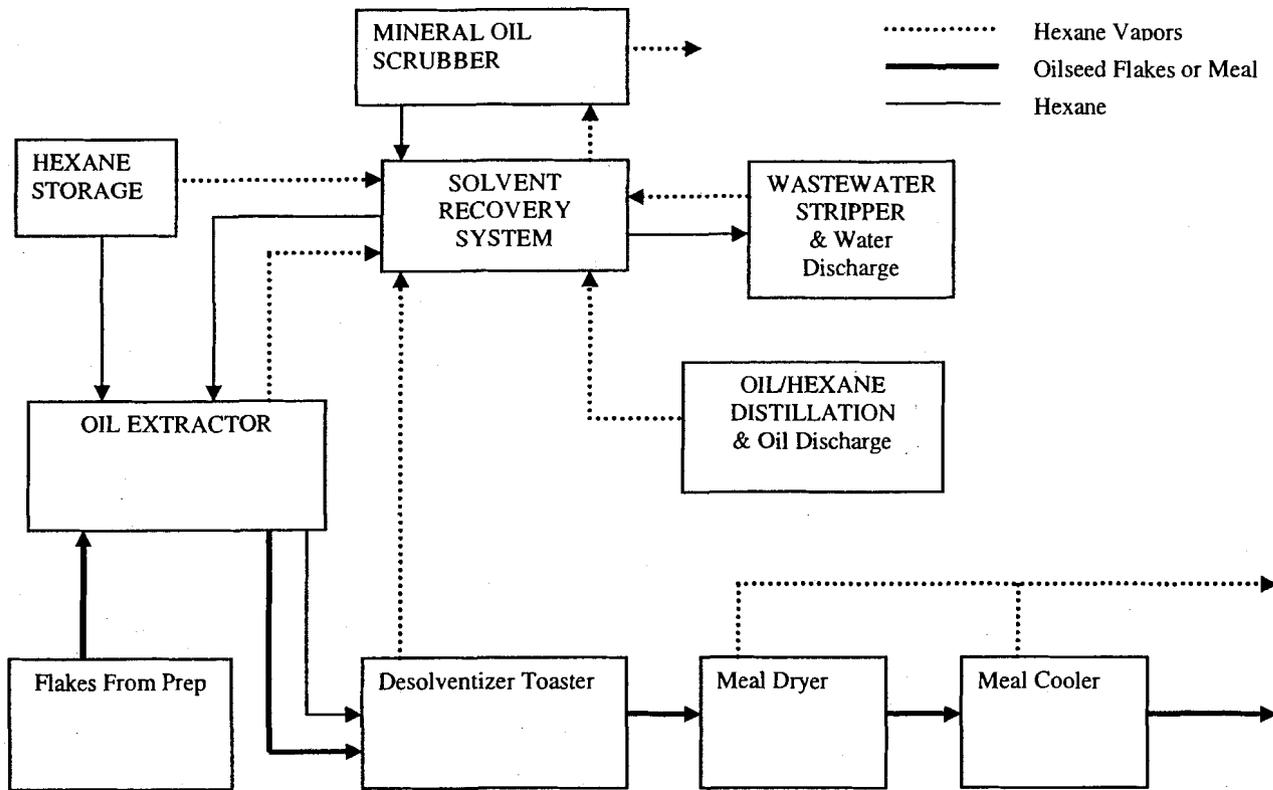


Diagram 3.2 Process Flow Diagram for Phenix Technology Program on Coal Boiler

The following flow diagram presents the affected emission unit and associated control technology.

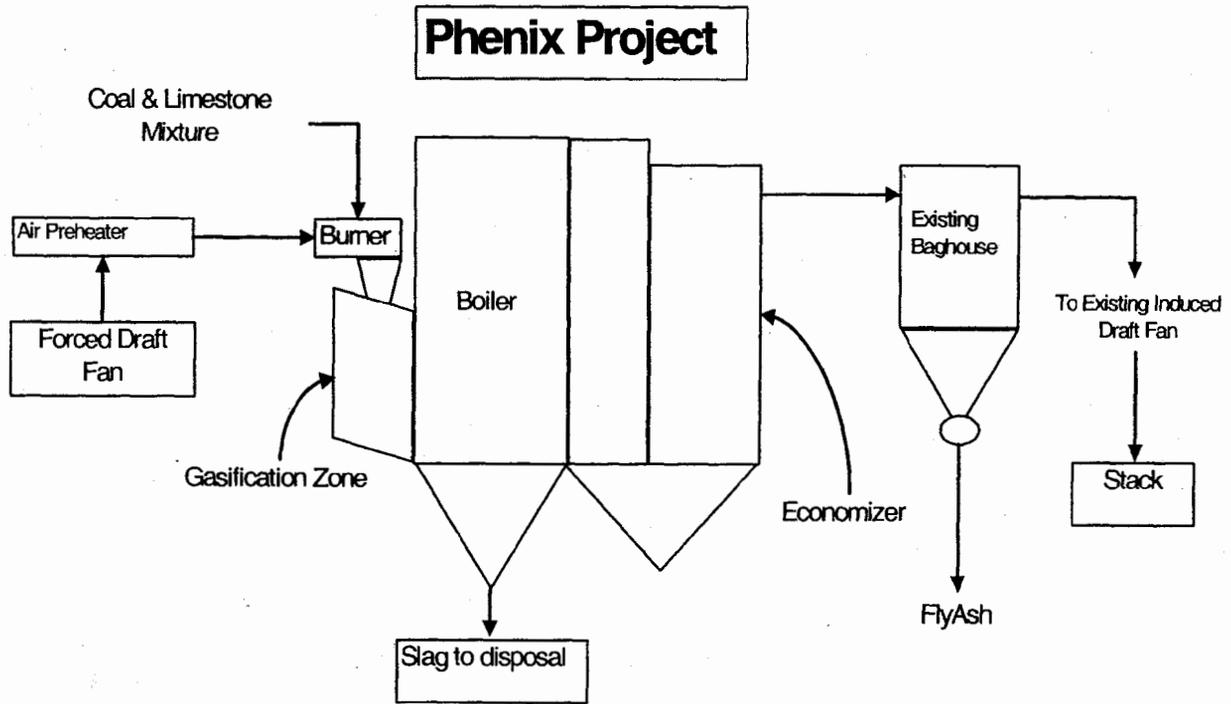
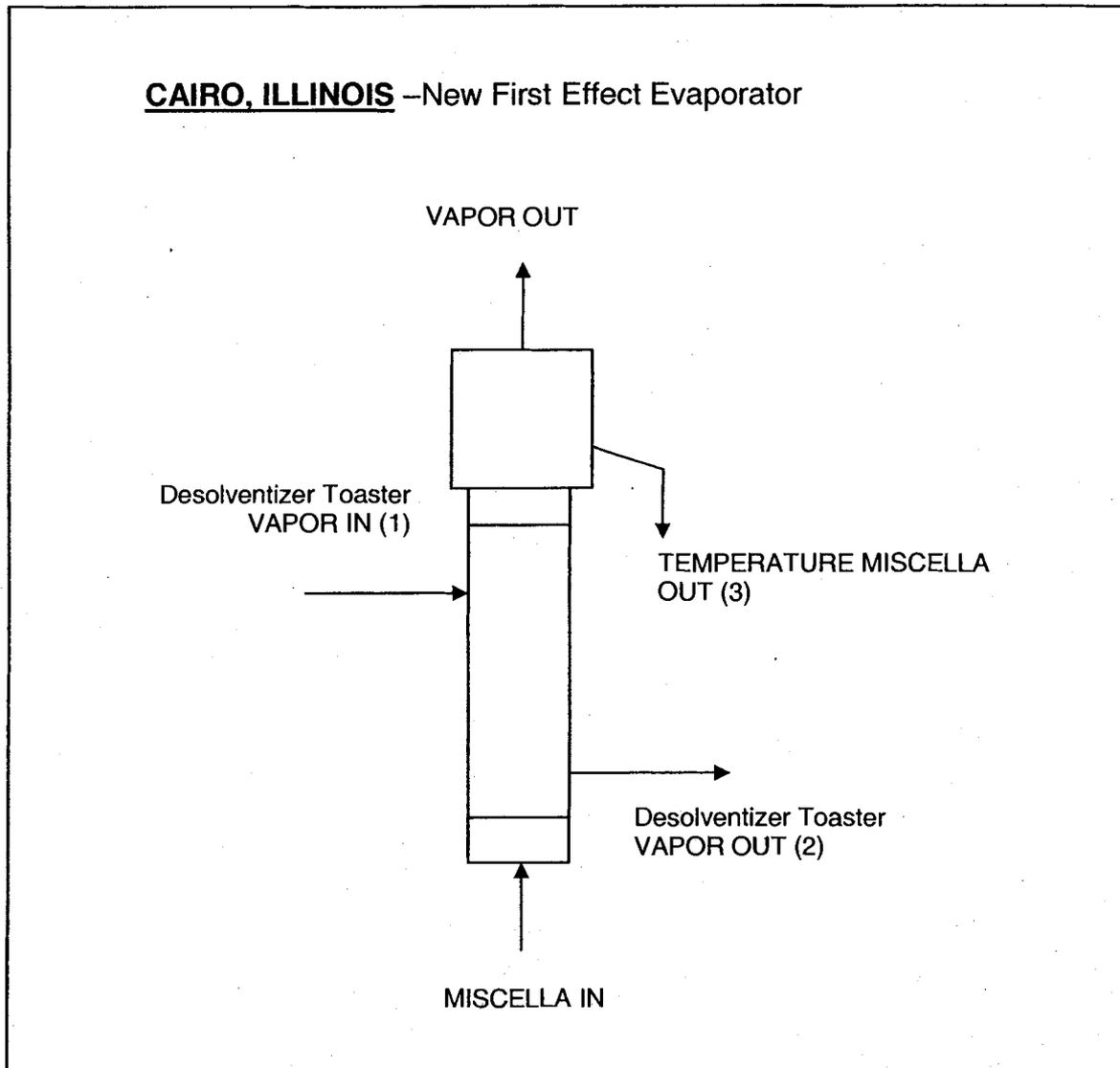


Diagram 3.3 Process Flow Diagram for First Effect Evaporator Project

The following flow diagram presents the proposed VOC control technology.



Install New First Effect Evaporator to control volatile organic compounds (VOC)

- (A) Pressure Differential of readings (1) and (2) will be maintained at 6 inches H₂O or less, under normal operating conditions.
- (B) Excluding start-ups and shutdowns, temperature of miscella discharge (3) will be maintained in the range of 115°F to 135°F under normal operating conditions:

4.0 Emission Units Requiring Pollution Control Equipment

The following emission units and control equipment have been designated as affected units in the Consent Decree and have emission limits requiring pollution control technology or alternative projects designed to reduce emissions. Changes to the requirements listed in the following table may be considered non-material modifications under Paragraph 5.b. of the Consent Decree, provided Bunge (1) achieves the emission limits specified in this CTP and the Consent Decree for the Cairo, Illinois Plant and (2) obtains prior written approval of the change(s) from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree.

Emission Unit Description	Control Equipment/Optimization Description
Coal Boiler No. 1 ⁽¹⁾	Phenix Technology Program to Achieve Lower Emission Limit (SO ₂ , NO _x)
First Effect Evaporator	Replace First Effect Evaporator (VOC)

⁽¹⁾ Bunge has two (2) coal boilers at its Cairo, Illinois Plant. If Coal Boiler No. 2 is operated, Bunge will follow the protocol in Section 10.3 of this CTP.

5.0 Engineering Design Criteria for Pollution Control Equipment

Any deviation from the design criteria listed here shall be reported in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules. Note that the specific design criteria listed here are preliminary and subject to change pending development of additional data. Changes to the requirements listed in the following table may be considered non-material modifications under Paragraph 5.b. of the Consent Decree, provided Bunge (1) achieves the emission limits specified in this CTP and the Consent Decree for the Cairo, Illinois Plant and (2) obtains prior written approval of the change(s) from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree.

Emission Unit Description	Control Equipment/Optimization Description	Design Criteria/Targets
Coal Boiler No. 1	Phenix Technology Program to Achieve Lower Emission Limits (SO ₂ , NO _x)	0.90 lbs SO ₂ /MMBtu ⁽¹⁾ 0.25 lbs NO _x /MMBtu ⁽¹⁾
	Alternative Technology Program to Achieve Lower Emission Limit (SO ₂ , NO _x)	TBD ⁽²⁾
First Effect Evaporator	Replacement of First Effect Evaporator (VOC)	Minimum surface area ≥ 7800 ft ²

⁽¹⁾ If the Phenix project is successful, the estimated SO₂ emission reductions will be approximately 250 tons per year and the NO_x emissions reductions will be approximately 78 tons per year. The SO₂ estimate is based on a calculated emission rate of 1.48 lbs/MMBTU during 2001 and 2002, and a target SO₂ emission rate of 0.90 lbs/MMBTU with the Phenix technology. The NO_x estimate is based on a calculated emission rate of 0.43 lbs/MMBTU during 2001 and 2002, and a target NO_x emission rate of 0.25 lbs/MMBTU with the Phenix technology. These estimates assume that the "Phenix" converted boiler will provide essentially all of the needed steam during the year.

$$[(0.90 \text{ lbs SO}_2 / \text{MMBTU}) / (1.48 \text{ lbs SO}_2 / \text{MMBTU})] \times 643 \text{ tons SO}_2 / \text{year} = 391 \text{ tons SO}_2$$

$$[(0.25 \text{ lbs NO}_x / \text{MMBTU}) / (0.43 \text{ lbs NO}_x / \text{MMBTU})] \times 188 \text{ tons NO}_x / \text{year} = 110 \text{ tons NO}_x$$

The 643 tons SO₂/year estimate was calculated using two out of the last five years that are representative of actual emissions (annual reported emissions for SO₂) at the Cairo, Illinois Plant. The 188 tons NO_x/year estimate was calculated using two out of the last five years that are representative of actual emissions (annual reported emissions for NO_x) at the Cairo, Illinois Plant. The Plant's processing quantities and related boiler emissions for 2001 and 2002 were deemed to be representative of a normal operational year (i.e., no abnormal shutdown periods). Therefore, as shown in the following table, the baseline SO₂ emissions for the boiler that will be converted to the "Phenix" technology is 643 tons/year and the baseline NO_x emissions for the boiler that will be converted to the Phenix technology is 188 tons/year.

Year	Actual SO ₂ Emissions (tpy)	Actual NO _x Emissions (tpy)
2001	658	193
2002	627	183
Average	643	188

643 tons SO₂ - 391 tons SO₂ = 252 tons SO₂ reduction (approximately 250 tons)
 188 tons NO_x - 110 tons NO_x = 78 tons NO_x reduction

⁽²⁾ Value to be determined upon approval by EPA and IEPA once detailed engineering has been completed for the control equipment.

6.0 Monitoring Parameters for Pollution Control Equipment

Beginning no more than 30 days following startup of the control equipment described below or thirty days from lodging of the Consent Decree, whichever is later, Bunge shall monitor the parameters listed below. Changes to the requirements listed in the following table may be considered non-material modifications under Paragraph 5.b. of the Consent Decree, provided Bunge (1) achieves the emission limits specified in this CTP and the Consent Decree for the Cairo, Illinois Plant and (2) obtains prior written approval of the change(s) from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree.

All monitoring data collected shall be recorded and maintained on-site. Any deviation from monitoring frequency, record keeping and/or range shall be reported in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules.

Emission Unit Description	Control Equipment/Optimization Description	Parameter Monitored	Compliance Operating Range/Limit	Monitoring Frequency
Coal Boiler No. 1	Phenix Technology Program to Achieve Lower Emission Limit (SO ₂ , NO _x)	TBD ⁽¹⁾	TBD ⁽¹⁾	TBD ⁽¹⁾
First Effect Evaporator	Replacement of First Effect Evaporator	Pressure Drop	≤ 6 inches H ₂ O under normal operating conditions	Once per operational day
		Operating Temperature	115°F to 135°F under normal operating conditions	once per operational day

⁽¹⁾ Value to be determined upon approval by EPA and IEPA once detailed engineering has been completed for the control equipment.

7.0 Emission Limits

Bunge shall comply with the emissions limits in the table below pursuant to the requirements in this CTP. Bunge shall report any deviation from emission limits in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules.

Emission Unit Description	Control Equipment / Optimization Description	Pollutant(s)	Emission Limit(s)
Coal Boiler No. 1	Phenix Technology Program to Achieve Lower Emission Limit (SO ₂ , NOx)	SO ₂ NOx	0.90 lbs SO ₂ /MMBtu ^{(1) (2)} 0.25 lbs NOx /MMBtu ^{(1) (2)}
	Alternative Technology Program to Achieve Lower Emission Limit (SO ₂ , NOx)	SO ₂ , NOx	TBD ^{(1) (2)}
First Effect Evaporator	Replacement of First Effect Evaporator	VOC	Solvent Loss Ratio ⁽²⁾

⁽¹⁾ If an alternative technology is installed, the emission limit value will be determined upon approval by EPA and IEPA once detailed engineering has been completed for the control equipment and/or optimization.

⁽²⁾ The procedure for establishing this limit is outlined in Section 10.0 of this CTP.

8.0 Schedules for Emission Reduction Projects

Bunge shall report any deviation from the applicable schedules in the semi-annual reports required by Paragraph 47 of the Consent Decree and as required under other state and federal rules.

The following schedule implements Paragraphs 14 and 15 of the Consent Decree:

First Effect Evaporator Replacement

Emission Reduction Project	Schedule ⁽¹⁾
Complete replacement of first effect evaporator	December 31, 2005

Phenix Technology Program on Coal Boiler No. 1

Emission Unit Description	Milestone	Deadline ⁽¹⁾
Coal Boiler No. 1	Install Phenix Technology	18 months after lodging of Consent Decree
	Evaluation Period Ends for Phenix Technology	24 months after lodging of Consent Decree
	Submit Evaluation Report	27 months after lodging of Consent Decree
	Establish Final SO ₂ and NO _x Limits for Coal Boiler No. 1	30 months after lodging of Consent Decree

(1) These deadlines are only applicable if the Phenix technology installation reasonably meets the design criteria in Section 5.0 of the CTP. Associated deadlines are based on EPA and IEPA approval and therefore, may be delayed accordingly pursuant to the provisions of the Consent Decree. In addition, each of the deadlines in this column may be extended by a maximum of six months as a non-material modification to the Consent Decree, provided that: (1) the term of Bunge's Coal Demonstration Grant Agreement ("Agreement") with the Illinois Department of Commerce and Economic Opportunity is extended; and (2) Bunge obtains prior written approval of the extension from EPA and IEPA as provided in Paragraph 5.b. of the Consent Decree. If the Illinois Department of Commerce and Economic Opportunity terminates the Agreement due to non-appropriation, insufficient appropriation, or reduced funding sources/revenue pursuant to Part 5.5.A.(1) or (2) of the Agreement, each of the deadlines in this column may be further extended by a maximum of an additional twelve months as a non-material modification to the Consent Decree, provided that Bunge obtains prior written approval of the extension from EPA and IEPA as provided in Paragraph 5.b of the Consent Decree. Any extension of the deadlines as described in this footnote would also apply to the deadline for implementing operating and final usage limits on Coal Boiler No. 2.

Operating and Fuel Usage Limits on Coal Boiler No. 2

Emission Unit Description	Milestone	Deadline
Coal Boiler No. 2	Limit Operating Hours ⁽²⁾	30 months after lodging of Consent Decree ⁽³⁾

⁽²⁾ Operational Limits for Coal Boiler No. 2:

Bunge shall limit the operation of Boiler No. 2 to "backup status", as defined in Section 10.3, below, after the Phenix technology has been installed, tested, and reasonably meets the design criteria set forth in this CTP on Boiler No. 1.

⁽³⁾ If Bunge has to install an alternative technology on Boiler No. 1, then Bunge will limit the operation of Boiler No. 2 to "backup status", as defined in Section 10.3, no later than 6 months after the installation of the alternative technology on Boiler No. 1.

9.0 Pollution Control Equipment Performance Test Schedule and Test Methods

By no later than 180 days after installation of the Phenix technology or an Alternative Technology required by Sections 4.0 and 5.0 of this CTP, Bunge shall conduct the following performance testing. The deadline for this performance testing may be extended, as a non-material modification to the Consent Decree, if EPA and IEPA agree that such extension is warranted by (1) the terms of the IEPA permit for the Phenix technology or Alternative Technology or (2) any extension of deadlines granted pursuant to Section 8.0 of this CTP.

Emission Unit / Pollution Control Device	Pollutants Tested	Test Method
Coal Boiler No. 1	SO ₂ (outlet) NO _x (outlet)	As applicable, Methods 1, 2, 3A or B, 4, 6C, and 19 or whatever other methods are applicable As applicable, Methods 1, 2, 3A or B, 4, 7E, and 19 or whatever other methods are applicable

Bunge shall conduct source testing for compliance or demonstration of emission limits in accordance with a testing protocol approved by EPA and IEPA. During source testing, Bunge shall monitor, at a minimum, the operating parameters specified in Section 6.0 of this CTP.

No later than 60 days after the completion of the source testing, Bunge shall submit an emissions report to IEPA.

10.0 Procedures for Optimization of Control Equipment and Setting Emission Limits**10.1 Establish Lower SO₂ and NO_x Limits for Coal Boiler No. 1**

Bunge shall establish SO₂ and NO_x emission limits for Coal Boiler No. 1 that are equivalent to the Phenix technology design criteria specified in Section 5.0 of this CTP. These limits are to be established pursuant to the requirements of Paragraphs 40 and 41 of the Consent Decree. Bunge will conduct a minimum of one test (i.e., three 1-hour runs) using the methods specified in Section 9.0 of this CTP.

Bunge may, at its option, conduct additional tests on any emission unit to provide a more extensive database on which to base the unit's limit.

Proposed and Final Emission Limits for Phenix Technology. By no later than 30 months after lodging of the Consent Decree or such later time as provided in Section 8.0 of this CTP, the EPA and IEPA shall set the final emission limits, and operating parameter ranges or limits, as appropriate, based on Bunge's Evaluation Report under the paragraph above, process variability, a reasonable certainty of compliance and any other information pertinent to the specific emission unit. Bunge shall comply with the proposed emission limit immediately following submission of the Evaluation Report and shall comply with the Final Limit no later than 60 days following Bunge's receipt of notice from EPA and IEPA regarding the final emission limit.

10.2 Evaluation Report of Alternative Technologies

If the Phenix technology program does not meet the design criteria specified in Section 4.0 of this CTP, then Bunge will follow the steps outlined in Sections 2.3 through 2.6 of this CTP. Further, the following requirements will apply:

Initial Emissions Report. No later than 7 months after installation of the alternate control technology, Bunge shall submit a report to EPA and IEPA on the evaluation of the alternative control technology. The report shall include a determination whether the alternative technology is capable of meeting the design criteria in Section 5.0 of this CTP. This report shall include, where applicable, the source test report or a summary of emission monitoring data used during the demonstration period, Bunge's proposed emission limits as required by this CTP, the operating parameter(s) ranges or limits that Bunge proposes to monitor for compliance demonstration.

Proposed and Final Emission Limits for Alternative Technology. By no later than a date to be determined by Bunge, EPA and IEPA, EPA and IEPA shall set the final emission limit, and operating parameter ranges or limits, as appropriate, based on Bunge's Initial Emissions Report under the paragraph above, process variability, a reasonable certainty of compliance and any other information pertinent to the specific emission unit. Bunge shall comply with the proposed emission limit immediately following submission of the Initial Report and shall comply with the Final Limit no later than 60 days following Bunge's receipt of notice from EPA and IEPA regarding the final emission limit.

10.3 Operational Limits for Coal Boiler No. 2

Bunge shall only operate Boiler No. 2 with coal that meets an emission limit of less than or equal to 1.8 lbs SO₂/MMBtu. If Bunge installs, tests, and reasonably meets the design criteria and schedule set forth in this CTP for the Phenix technology on Boiler No. 1, then no later than 30 months after lodging of the Consent Decree, Bunge shall limit the operation of Boiler No. 2 to "Backup Status" as defined below. If Bunge installs an alternative technology on Boiler No. 1, then Bunge will limit the operation of Boiler No. 2 to "backup status", as defined below, no later than 6 months after the installation of the alternative technology on Boiler No. 1. If the Phenix technology is not successful as determined in accordance with Appendix 1 (Decision Tree) and Section 2.0 and no alternative technology is required to be installed, then Bunge will operate Boiler No. 1 and Boiler No. 2 consistent with the requirements of their operating permit. For the purpose of this CTP, "Backup Status" means operating only during times of regularly scheduled maintenance or malfunction events, for Boiler No. 1 or its control system, not to exceed (regularly scheduled maintenance hours + malfunction hours) on a 12-month basis.

10.4 VOC Emissions Limit

Interim VOC SLR Emissions Limit

In accordance with Attachment A to the Consent Decree, Bunge shall begin to account for solvent loss and quantity of oilseeds processed to comply with a 0.16 gal/ton VOC solvent loss ratio (SLR) at the Cairo, Illinois Plant. The first compliance determination with this interim limit will be based on the first 12 operating months of data collected after the date on which Bunge begins to account for solvent loss under this paragraph.

Final VOC SLR Emissions Limit

In accordance with Attachment A to the Consent Decree, Bunge shall establish a final VOC SLR limit for the Cairo, Illinois Plant according to the requirements of the VOC CTP for Defendants' Soybean Extraction Plants and Paragraphs 31 through 36 of the Consent Decree.

