FPL

Florida Power & Light Company, 19050 State Road 62 Parrish, FL 34219-9220

July 26, 2005

RECEIVED
AUG 02 2005
BUREAU OF AIR REGULATION

Mr. Joel Smolen
State of Florida
Department of Environmental Protection
Southwest Florida District - Air Program
8407 Laurel Fair Circle
Tampa, Florida 33610-7355

RE: Manatee Power Plant - Unit 3
Facility I.D. No.0810010
Emission Unit Nos. 3A, 3B, 3C, 3D
Best Operating Practice Procedure

Dear Mr. Smolen:

Please find enclosed the Manatee Plant Unit 3 Best Operating Practice procedure in accordance with Site Certification Order No. PA 02-44 and Condition of Certification XXIII.W.5.b - Work Practice Standard.

If you have any questions, please contact Lynn French at (941) 776-5269.

Sincerely,

Paul Plotkin

Paul Plotkin
Plant General Manager

Enclosures: (1)

cc: Mr. Hamilton S. Oven, FDEP Siting Office
Mr. Erin Pichard, FDEP Division of Air Resource
✓Ms. Trina Vielhauer, FDEP Division of Air Resource

MINIMIZING AIR EMISSIONS – UNIT 3
BEST OPERATIONAL PRACTICES

It is important to know your air permit limits and operate within the limits. This procedure covers permitted limits, excess emission allowances, and provides best operational practices to minimize emissions.

NOTE: CEM's – Continuous Emission Monitoring Systems are key to knowing what the CT is emitting at any given time. Your CEM screens will provide valuable information for real time tracking of emissions.

1. Permit Limits

SO2 Emissions	Fuel Specifications – 2 grains Sulfur /100 scft natural gas	
NOx (ppmvd @ 15% O2-natural gas)	2.5 (CEM - 24 hour block average)	
CO (ppmvd @ 15% O2-natural gas)	10.0 (CEM – 24 hour block average)	
VOC (ppmvd @ 15% O2-natural gas)	1.3 Normal, 4.0 with DB (Annual test)	
Visible Emissions	10%	
PM/PM10	Fuel Specifications	
Heat Input Gas, mmbtu (LHV)/hr Heat Input Duct Burners per HRSG mmbtu(LHV)/hr Total Max for year all 4 HRSG DB's	1600 (air inlet temp. 59F and 100% load) 495 5,702,400	
Hours of Operation Allowed	8760	

Hrs of Operation (Peaking-PK)	400 ea Unit in 12 consecutive months	
Hrs of Operation allowed (fogging)	No Limit	
Ammonia Slip (ppmvd @ 15% O2)	5 (Annual Test)	

2. Excess Emission Allowances

The air operating permit allows for excess emissions during specific activities, ie. startup, shutdowns, and documented malfunctions. Understanding of these events is very important so that the operator can be certain that the CEM is excluding data during these time frames. If excess emissions occur which are permitted, then this data should be excluded from the NOx and CO CEM 24-hour block averages.

Excess Emission Allowances in a 24-Hour Period
(CEMs Midnight to Midnight)

CT/HRSG - *Hot* (HRSG HP Steam Drum > 450 psig) STARTUP & SHUTDOWN – **2 HRs**
CT/HRSG – Documented MALFUNCTION – **2 HRs**
CT/HRSG – *Cold* (HRSG HP Steam Drum < 450 psig for at least 1 HR) STARTUP – **4 HRs**

Steam Turbine System – *Cold* (Startup following 48 Hour shutdown of the Steam Turbine System) STARTUP – Any CT/HRSG – no more than **6 HRs**, with **12 HRs** total for all CT/HRSG's.

Steam Turbine System – SHUTDOWN – **3HRs** for any CT/HRSG.

3. Excess Emissions Report

Excess emissions entirely or in part by poor maintenance, poor operation, or any other equipment or process failure that may reasonably be prevented during start-up, shut down or malfunction shall be prohibited.

If excess emissions occur due to a malfunction, the FDEP (Florida Department of Environmental Protection) Southwest District office shall be notified within 1 working day. They shall be advised of the nature, extent and duration of the excess emissions: the cause of the emissions and the action taken to correct the problem.

4. Best Operational Practices

Best operating practices must always prevail during any period of operation. Best operating practices include any action taken for a given condition which will eliminate/minimize the duration of excess emissions; (i.e.) adjusting ammonia flow, reducing load, removal from load control, lowering load rate or pressure rate changes.

Emergency situations, equipment failures, and any non-standard occurrence have always called for prompt operator action for a number of reasons. These regulations merely add one more quantitative reason for prompt action. Dropping load, even removing the unit from service may be necessary to meet permit conditions. As with all operating situations, good judgement regarding equipment, personnel safety, and system conditions is imperative.

All excess emission events should be documented in the operator log book. Documentation should include a description of the event, the corrective action taken and any other pertinent information. In addition, the Environmental Specialist and Production Manager should be notified anytime an excess emission event occurs or has the potential to occur.

5. Best Operational Practices for Minimizing Emissions During Startup and Shutdown

Normal startup and shutdown sequences are automatically controlled by the DCS, Digital Control System. Operators should closely monitor the process to ensure equipment and controls are operating as designed and emissions are minimized during startup and shutdown.

Main Startup sequences include:

- The SCR, Selective Catalyst Reduction, system dilution air blowers will be started prior to a CT, Combustion Turbine, start.
- The CT will increase load to achieve the dry low NOx (DLN) Mode 6 as soon as the process allows depending on the type of startup.

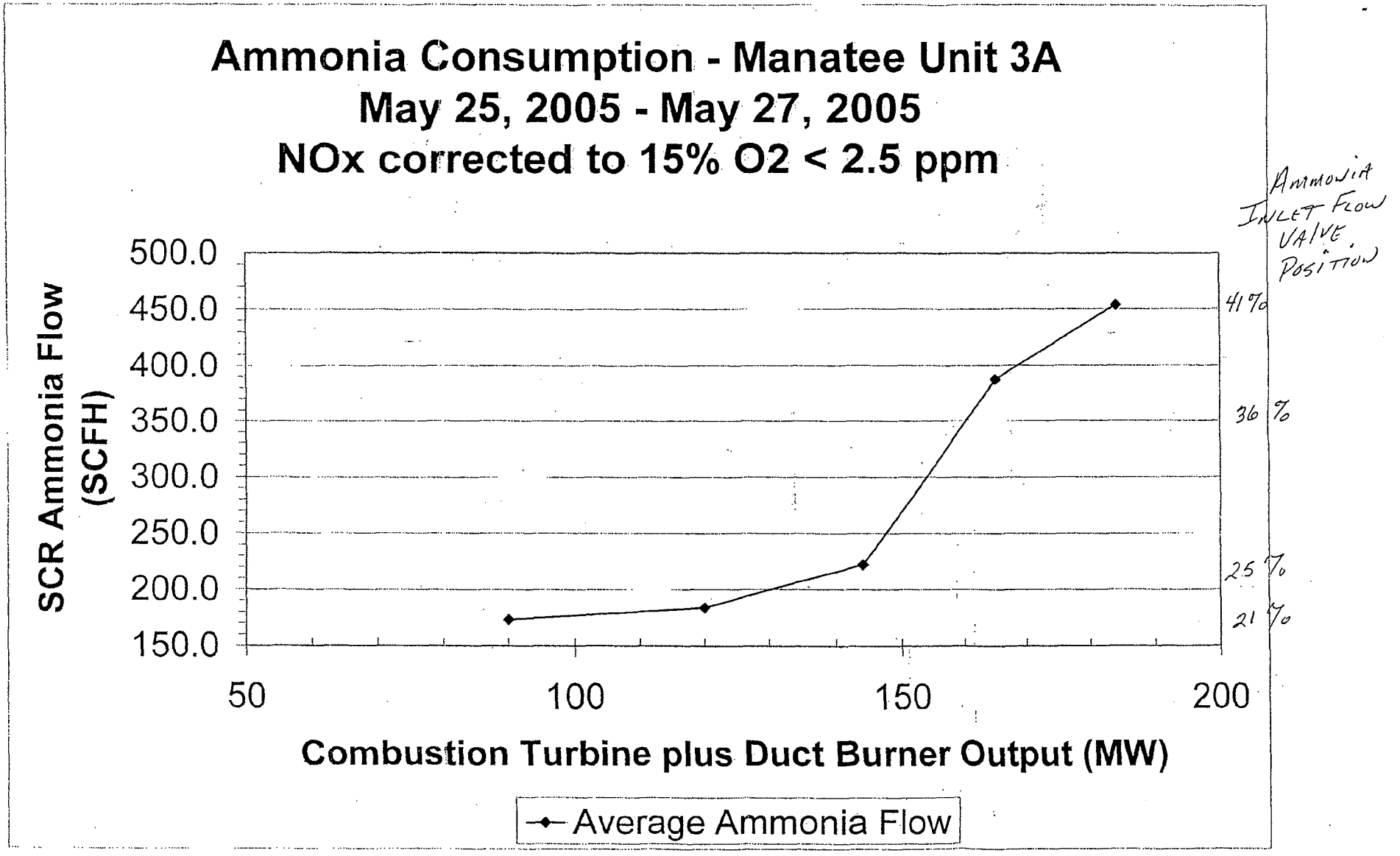
- The DCS monitors the SCR reactor inlet gas temperature until it reaches the required minimum temperature for ammonia injection, 540 F.
- Once the temperature is above 540 F and all other permissives for ammonia injection have been met, the ammonia control valve will automatically open to bring the NOx level to a set point slightly lower than the permit limit, 2.5 ppm @ 15% O2, and will maintain throughout all of the load conditions.

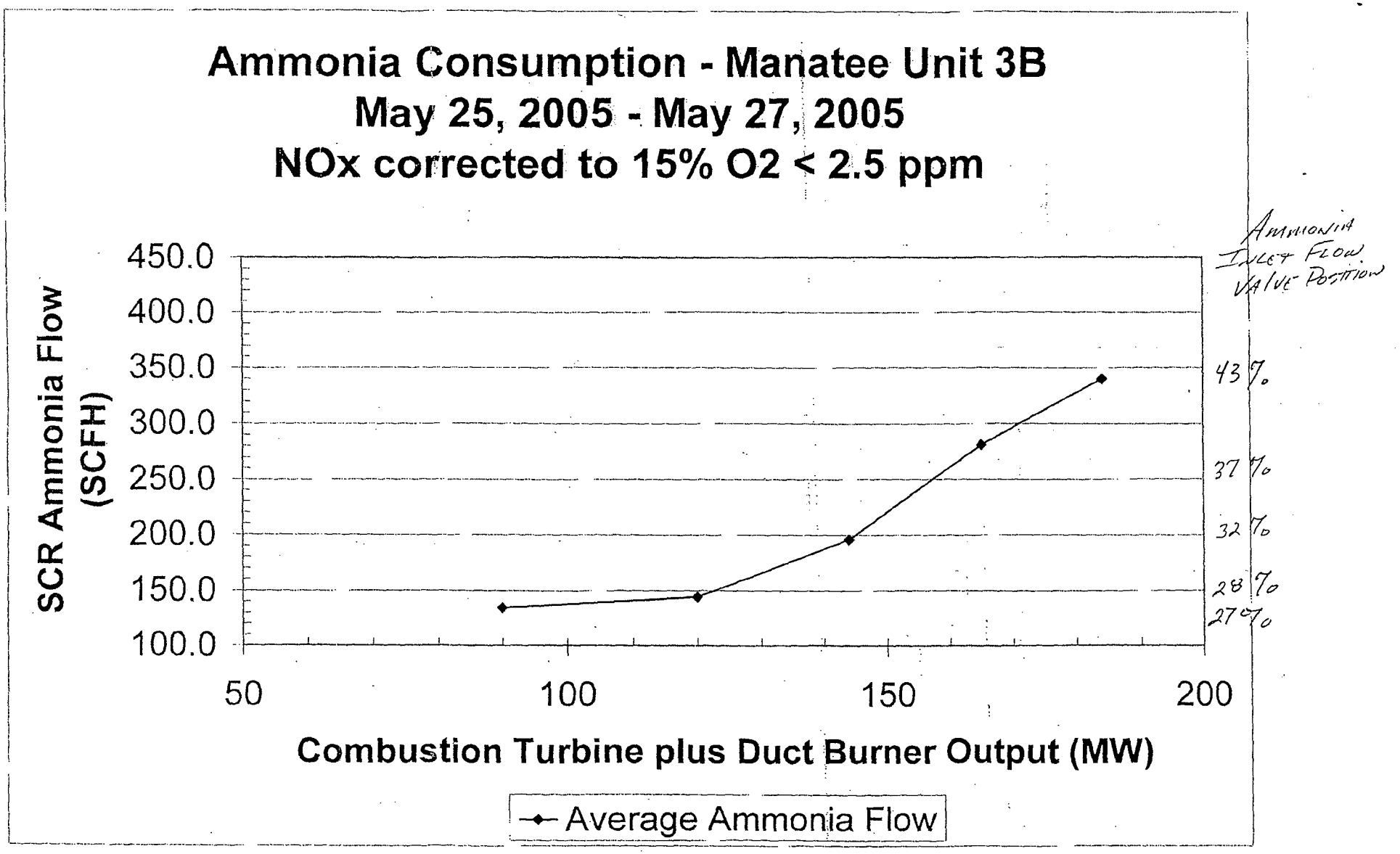
Main Shutdown sequences include:

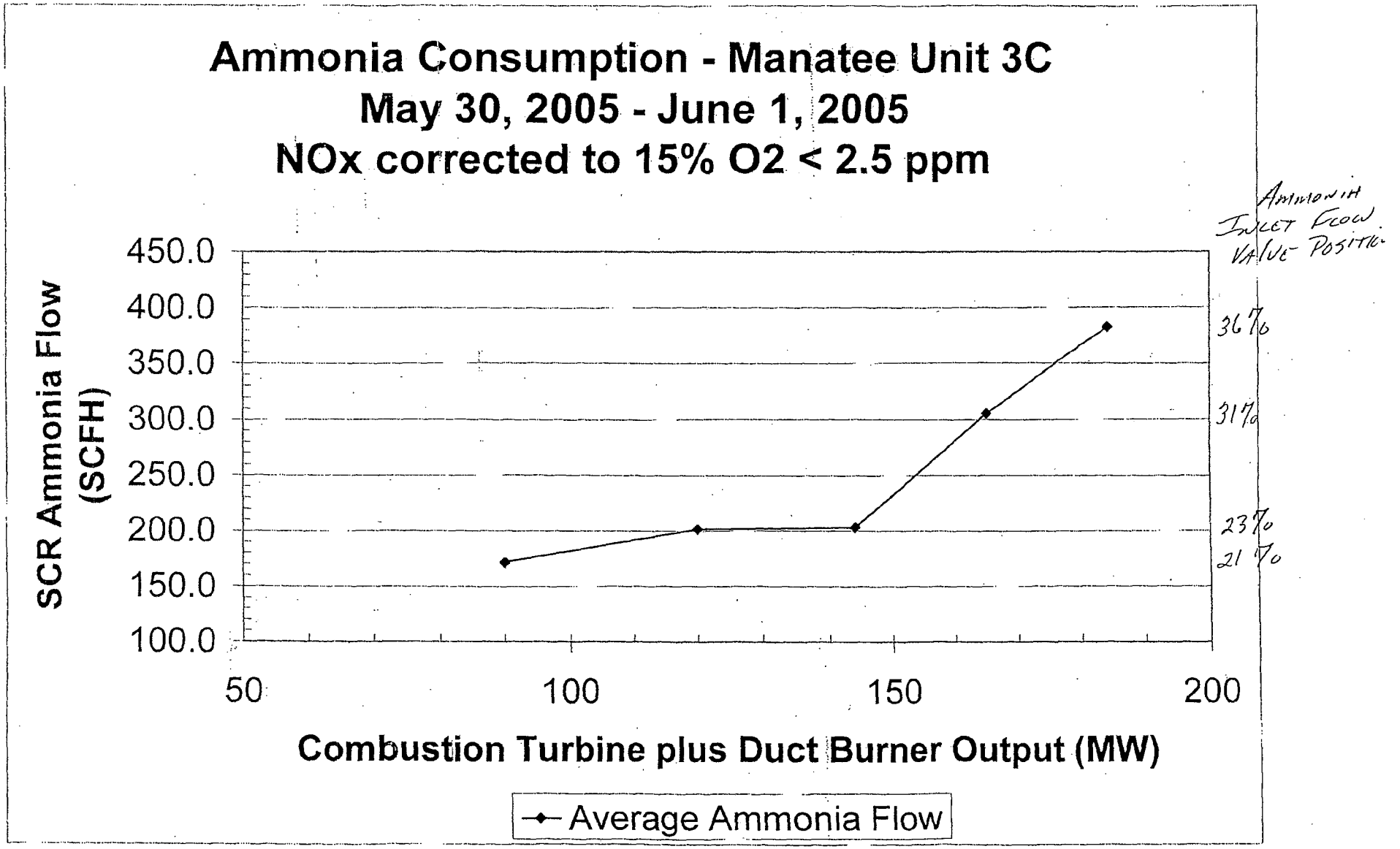
- When the CT shutdown has been initiated, load and reactor inlet gas temperature begins to drop.
- Once the temperature reaches 540 F, the ammonia flow control valve begins to close and ammonia is no longer injected into the SCR.
- Ammonia injected at temperatures less than 540 F can cause the formation of ammonia bisulfate, a sticky substance that can foul the SCR catalyst.
- The dilution air blowers will continue to run to purge the ammonia system and to prevent the collection of flue gas condensate in the ammonia flow control unit.

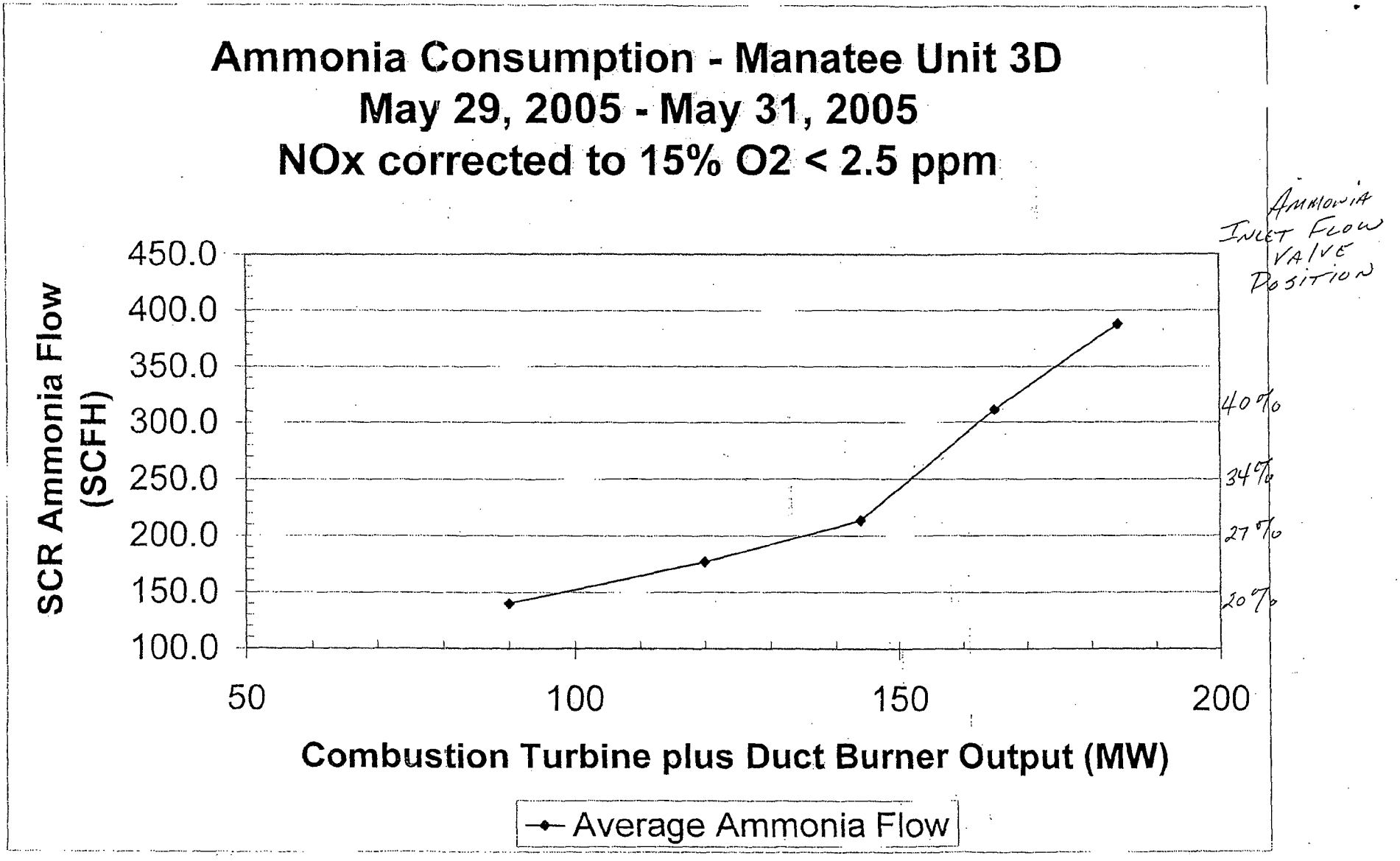
5. Best Operational Practices for NOx Monitor Downtimes or Malfunctions

Should there be a loss of the NOx analyzer or a malfunction; the operator should take manual control of the ammonia flow control valve. The control center operator will place the ammonia flow control valve in manual control and select a valve position which provides adequate ammonia flow for the given load conditions according to the attached ammonia flow rate vs. load curves. These curves were developed for each CT and document the ammonia flow rates required to meet permitted emissions levels over the range of load conditions.


Ammonia Consumption - Manatee Unit 3A
May 25, 2005 - May 27, 2005
NOx corrected to 15% O2 < 2.5 ppm
SCR Ammonia Flow (SCFH)
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
50
100
150
200
Combustion Turbine plus Duct Burner Output (MW)
Average Ammonia Flow
Ammonia Inlet Flow Valve Position
41%
36%
25%
21%


Ammonia Consumption - Manatee Unit 3B
May 25, 2005 - May 27, 2005
NOx corrected to 15% O2 < 2.5 ppm
SCR Ammonia Flow (SCFH)
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50
100
150
200
Combustion Turbine plus Duct Burner Output (MW)
Average Ammonia Flow
Ammonia Inlet Flow Valve Position
43%
37%
32%
28%
27%


Ammonia Consumption - Manatee Unit 3C
May 30, 2005 - June 1, 2005
NOx corrected to 15% O2 < 2.5 ppm
SCR Ammonia Flow (SCFH)
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50
100
150
200
Combustion Turbine plus Duct Burner Output (MW)
Average Ammonia Flow
Ammonia Inlet Flow Valve Position
36%
31%
23%
21%


Ammonia Consumption - Manatee Unit 3D
May 29, 2005 - May 31, 2005
NOx corrected to 15% O2 < 2.5 ppm
SCR Ammonia Flow (SCFH)
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50
100
150
200
Combustion Turbine plus Duct Burner Output (MW)
Average Ammonia Flow
Ammonia Inlet Flow Valve Position
40%
34%
27%
20%