



Fan Data Sheet

CML Northern Blower Inc
901 Regent Ave W.
Winnipeg, MB. R2C 2Z8
Phone: (204) 222-4216
Fax: (204) 222-7601

CUSTOMER: Cleaver-Brooks
PROJECT: CP-4143 Southern Co
Airflow Sales, LLC / brads
SOLD BY:

ORDER #: A59479
CUSTOMER PO: L159901

LINE ITEM #: 59479.01

Qty (1) Heavy-duty airfoil, Design 5740, Size 5712, Class HD, 94%, Arr 7S1, Rot CW, Discharge TH

Maximum allowable fan speed 1800 RPM at 180 F

Condition	Volume	SP	OV	RPM	Power	Temp	Altitude	Density
Operating	85036 CFM	42.6 inWG	5006 FPM	1780 RPM	667.72 BHP	157 F	482 ft	0.0615 lb/cu ft

Tags

CP-4143 Tag Fan: 01C-QC-FN-2002

Features

- Access Door - Position: 9 o'clock, Raised
- Coupling Guard
- Dye-penetrant examination of wheel welds
- Housing Drain - Drain Size: 1.5" NPT, Location: On inlet side sheet at lowest point of the housing scroll
- Insulation Provisions - Extended Drain, Insulation ins, Insulation Thickness: 4"
- Motor Mounting
- Percent Width
- Punched Flanged Outlet
- Shaft Seal - Type: Gasketted
- Split Pillow Block Bearings
- Variable Inlet Vanes - Actuator: Bracket and Mounting by Northern Blower, Low Leakage Design, Type: Automatic
VIV Leakage rate is 10-12%
- 1/2" Housing Construction
- 4140 shaft material
- Fan design for 10% overspeed of test block condition
- Inlet VIV damper to actuator linkage. Tag VIV 01C-QC-ZD-2002
- Inlet VIV damper actuator mounting bracket off of fan pedestal

- Bearing Temperature Detection Device - Type: RTD (pair)
3 wire, 100 ohm platinum, transmitter not included.
- Coupling Mount - Type: Full
- Extended Grease Lines - Type: Nylon
- Inlet Box - Position: 360°, Type: Integral
- Mechanical Run Test - High Power
- Nameplate - Quantity per fan (1), Type: Standard
- Punched Flanged Inlet
- Shaft Guard for fan w/ center hung wheel
- Split Housing - Type: Vee
- Ultrasonic examination of shaft
- Vibratory stress-relieving of wheel
- 10 ga. airfoil blade construction
- Dependent bearing pedestals.
- Inlet VIV actuator: Beck model: 11-409, 1ph/60Hz/120V, 24 sec timing for 100° full stroke, 2 SPDT limit switches, manual handwheel, 4-20mA positioner and feedback c/w DCM with HART communications,
- Inlet silencer: VAW Systems model: 29VRIB-W34 c/w weatherhood and galvanized screen. Painted to match fan. To ship loose for field mounting on customer's mixing box. Tag: NCME-12020

5/26/2011 2:09:09 PM



APPROVED

Approved

CUSTOMER: Cleaver-Brooks
PROJECT: CP-4143 Southern Co
 Airflow Sales, LLC / brads
SOLD BY:

ORDER #: A59479
CUSTOMER PO: L159901

LINE ITEM #: 59479.01

Qty (1) Heavy-duty airfoil, Design 5740, Size 5712, Class HD, 94%, Arr 7S1, Rot CW, Discharge TH

Maximum allowable fan speed 1800 RPM at 180 F

Condition	Volume	SP	OV	RPM	Power	Temp	Altitude	Density
Operating	85036 CFM	42.6 inWG	5006 FPM	1780 RPM	667.72 BHP	157 F	482 ft	0.0615 lb/cu ft

- Fan Bently Nevada Vibration Monitoring System. 1900/65A general purpose monitor model: 1900/65A-01-01-03-01-01, 110V/60 Hz c/w weatherproof fiberglass NEMA 4X housing, Modbus communications, and Ethernet connection. To be mounted on motor pedestal on same side as motor vibration probe conduit box.
- Motor Bently Nevada Vibration Monitoring System. 1900/65A general purpose monitor model: 1900/65A-01-01-03-01-01, 110V/60 Hz c/w weatherproof fiberglass NEMA 4X housing, Modbus communications, and Ethernet connection. To be mounted on motor pedestal on same side as motor vibration probe conduit box.
- Fan bearing temperature alarm and shutdown settings: alarm - 180°F (82°C) and shutdown - 200°F (93°C).
- Fan bearing vibration alarm and shutdown settings (peak velocity, filter out): alarm - 0.25 in/s (6.4 mm/s) and shutdown - 0.40 in/s (10.2 mm/s).
- Motor Bently Nevada vibration probe cables from motor vibration conduit box to Bently Nevada monitoring system. QTY 4 - 3300 5MM & 8MM extension cables model: 330130-085-12-05
- Wire motor bearing Bently Nevada vibration probes cables to Bently Nevada monitoring system mounted on motor pedestal.

Paint Specification

Paint Spec: Interior & Exterior of Fan
 Surface Prep: SSPC-SP1 & SP2 cleaned surfaces.
 Primer: 1 coat alkyd primer.
 Finish: 2 coats Interlac 665 Alkyd Enamel.
 Guard Color: Safety Yellow

Motor Data

Motor supplied by NB, mounted by NB
 800 HP, 1800 RPM, 3/60/4160, Motor Frame 450CB
 TEFC, Premium Efficiency Efficiency, Teco-
 Westinghouse
 Conduit Box Position F1

- Fan Bearings - Drive bearing: Qty 2/bearing accelerometer model: 330400-01-05, SEIS extension cable 3-wire-armored (17 ft) model: 16710-17. Non-drive bearing: Qty 2/bearing accelerometer model: 330400-01-05, SEIS extension cable 3-wire-armored (25 ft) model: 16710-25. Qty 4 FTG GLND SL AL body seal grip model: 03839000.
- Lateral and torsional critical speed analysis.
- Motor bearing temperature alarm and shutdown settings: alarm - 194°F (90°C) and shutdown - 203°F (95°C).
- Motor bearing vibration alarm and shutdown settings (peak velocity, filter out): alarm - 100 micro-meter and shutdown - 130 micro-meter.
- Wire fan bearing Bently Nevada vibration accelerometers cables to Bently Nevada monitoring system mounted on motor pedestal.
- Wheel to shaft interference fit

Color: Boiler Blue

Paint Thickness Test Report

Model:

5/26/2011 2:09:09 PM



CUSTOMER: Cleaver-Brooks

ORDER #: A59479

PROJECT: CP-4143 Southern Co
 Airflow Sales, LLC / brads

CUSTOMER PO: L159901

SOLD BY:

LINE ITEM #: 59479.01

Qty (1) Heavy-duty airfoil, Design 5740, Size 5712, Class HD, 94%, Arr 7S1, Rot CW, Discharge TH

Maximum allowable fan speed 1800 RPM at 180 F

Condition	Volume	SP	OV	RPM	Power	Temp	Altitude	Density
Operating	85036 CFM	42.6 inWG	5006 FPM	1780 RPM	667.72 BHP	157 F	482 ft	0.0615 lb/cu ft

480V space heater, Class B insulation, Class B temperature rise, copper bar rotor, copper windings, SF - 1.15, 3 per phase winding RTD's, 1 per bearing 100 Ohm platinum RTD; 2 per bearing Bently Nevada vibration XL probes model: 31000-16-05-00-050-01-02, Bently Nevada transmitter model:330180-91-05, Bently Nevada extension cables model: 330130-070-01-00, CSA approved, split sleeve bearings, across the line starting, 650% inrush current, provisions for vibration equipment, SEL 2600A RTD module, Hawk 075 CL view ports, Mica type insulation, suitable for outdoor use, and 2 ground pads. Tag motor: 01C-QC-MO-2002.

Coupling Data

Coupling supplied by NB, mounted by NB
 Type: Coupling
 Fan End Bore : 3.9350/3.9360
 Coupling Gap: 7.5
 c/w stainless steel disc; std keyway; set screw; and limited end float

Manufacturer: Thomas Series 71
 Coupling Size : 375-71/8
 Motor End Bore : 4.3284/4.3297
 Coupling Fit: Interference Fit

Bearings

Outboard Bearing: SAFD 2522C3 x 3-15/16,RTD (float)

Drive Side Bearing: SAFD22522C3 x 3-15/16,RTD (fix)

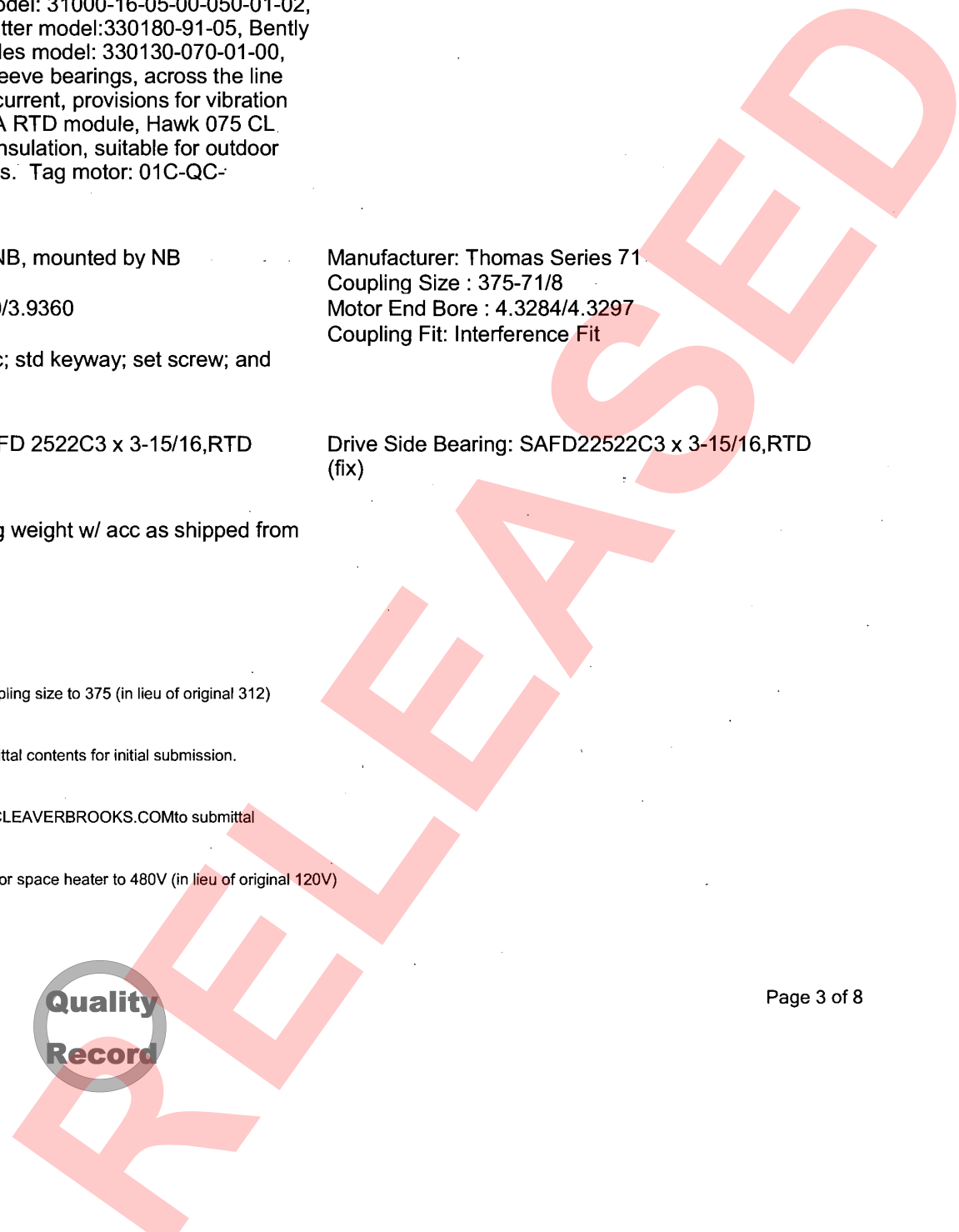
Fan Weight

Complete unit shipping weight w/ acc as shipped from factory: **28350 lbs

Revisions

- 10/5/2010
 - Changed coupling size to 375 (in lieu of original 312)
- 10/7/2010
 - revised submittal contents for initial submission.
- 11/4/2010
 - added DC@CLEAVERBROOKS.COMto submittal
- 11/22/2010
 - Changed motor space heater to 480V (in lieu of original 120V)

5/26/2011 2:09:09 PM





Fan Data Sheet

CML Northern Blower Inc
901 Regent Ave W.
Winnipeg, MB. R2C 2Z8
Phone: (204) 222-4216
Fax: (204) 222-77

CUSTOMER: Cleaver-Brooks
PROJECT: CP-4143 Southern Co
Airflow Sales, LLC / brads
SOLD BY:

ORDER #: A59479
CUSTOMER PO: L159901

LINE ITEM #: 59479.01

Qty (1) Heavy-duty airfoil, Design 5740, Size 5712, Class HD, 94%, Arr 7S1, Rot CW, Discharge TH

Maximum allowable fan speed 1800 RPM at 180 F

Condition	Volume	SP	OV	RPM	Power	Temp	Altitude	Density
Operating	85036 CFM	42.6 inWG	5006 FPM	1780 RPM	667.72 BHP	157 F	482 ft	0.0615 lb/cu ft

1/7/2011

- Deleted motor classification for fan data sheets due to 480V space heater.

3/8/2011

- Added motor Bently Nevada monitoring system 'Motor Bently Nevada Vibration Monitoring System. 1900/65A general purpose monitor model: 1900/65A-01-01-03-01-01, 110V/60 Hz c/w weatherproof fiberglass NEMA 4X housing, Modbus communications, and Ethernet connection.'
Added complete description to bearing thermocouple 'Drive Bearing: Quantity 1 - Bently Nevada model: 200125-01-06-01; 6M long cable; Type K; and Quantity 2 - FTG GLND SL NYL 1/4 NPT Male-. 12I P/N 03839242. Non-Drive Bearing: Quantity 1 - Bently Nevada model: 200125-01-09-01; 9M long cable; Type K; and Quantity 2 - FTG GLND SL NYL 1/4 NPT Male-. 12I P/N 03839242.'
- Added motor Bently Nevada proximitor probe cables 'Motor Bently Nevada vibration proximitor probe cables. QTY 4 - 3300 5MM & 8MM extension cables model: 330130-085-12-05.'
- Added fan Bently Nevada Vibration Monitoring System. '1900/65A general purpose monitor model: 1900/65A-01-01-03-01-01, 110V/60 Hz c/w weatherproof fiberglass NEMA 4X housing, Modbus communications, and Ethernet connection.'
- Added fan bearing vibration accelerometers 'Fan Bearings - Drive bearing: Qty 2/bearing accelerometer model: 330400-01-05, SEIS extension cable 3-wire-armored (17 ft) model: 16710-17. Non-drive bearing: Qty 2/bearing accelerometer model: 330400-01-05, SEIS extension cable 3-wire-armored (25 ft) model: 16710-25. Qty 4 FTG GLND SL AL body seal grip model: 03839000.'
- Added motor proximitor probes and thermocouples to motor description '1 per bearing Bently Nevada type K thermocouple model: 200125-01-06-01, 2 per bearing Bently Nevada vibration XL proximotr probes model: 330180-91-05'

3/9/2011

- Changed motor frame size to 450CB (in lieu of original 6808B)

3/16/2011

- Added Lateral torsional analysis report.

3/21/2011

- Added Bently Nevada vibration probe cables for motor.
- Added Fan bearing temperature alarm and shutdown settings.
Added Motor bearing temperature alarm and shutdown settings.
Added Fan bearing vibration alarm and shutdown settings.
Added Motor bearing vibration alarm and shutdown settings.
- Added wiring of fan bearing vibration accelerometers and thermocouples.
Added wiring of motor bearing vibration probes and thermocouples.
- Added mounting location for motor monitoring system.
Added mounting location for fan monitoring system.

3/22/2011

- Added motor bearing alarm and trip settings for the RTD's

3/23/2011

- Revised inlet silencer to match customer mixing box dimensions

3/24/2011

- Releasing from Approval

4/21/2011

- Changed viv actuator tag to 01C-QC-DP-2094 (in lieu of original FY-12200)
Changed motor tag to 01C-QC-MO-2002 (in lieu of original MTR-12200)
Changed fan tag to 01C-QC-FN-2002 (in lieu of original FN-12200)
Added motor vibration alarm and trip levels.

5/26/2011 2:09:09 PM



APPROVED

RELEASED

Approved



Fan Data Sheet

CML Northern Blower Inc
901 Regent Ave W.
Winnipeg, MB. R2C 2Z8
Phone: (204) 222-4216
Fax: (204) 222-7601

CUSTOMER: Cleaver-Brooks
PROJECT: CP-4143 Southern Co
Airflow Sales, LLC / brads
SOLD BY:

ORDER #: A59479
CUSTOMER PO: L159901

LINE ITEM #: 59479.01

Qty (1) Heavy-duty airfoil, Design 5740, Size 5712, Class HD, 94%, Arr 7S1, Rot CW, Discharge TH

Maximum allowable fan speed 1800 RPM at 180 F

<u>Condition</u>	<u>Volume</u>	<u>SP</u>	<u>OV</u>	<u>RPM</u>	<u>Power</u>	<u>Temp</u>	<u>Altitude</u>	<u>Density</u>
Operating	85036 CFM	42.6 inWG	5006 FPM	1780 RPM	667.72 BHP	157 F	482 ft	0.0615 lb/cu ft

5/6/2011

- Changed motor tag to: 01C-QC-MO-2002

5/24/2011

- Added limited end float to the Falk coupling.
Deleted fan bearing thermocouples.
Added fan bearings RTD's.
Changed description of fan bearing wiring to remove wiring of RTD's to monitoring system.
Changed description of motor bearing wiring to remove wiring of RTD's to monitoring system.
Changed actuator tag to 01C-QC-ZD-2002 (in lieu of original 01C-QC-DP-2094)
Changed motor description to RTD's (in lieu of original thermocouples)

5/26/2011 2:09:09 PM



RELEASED

APPROVED

Approved

CUSTOMER: Cleaver-Brooks

DATE: 5/26/2011

LINEITEM #: 59479.01

ENGINEER:

PROJECT: CP-4143 Southern Co

SUBMITTED BY: David Sprung

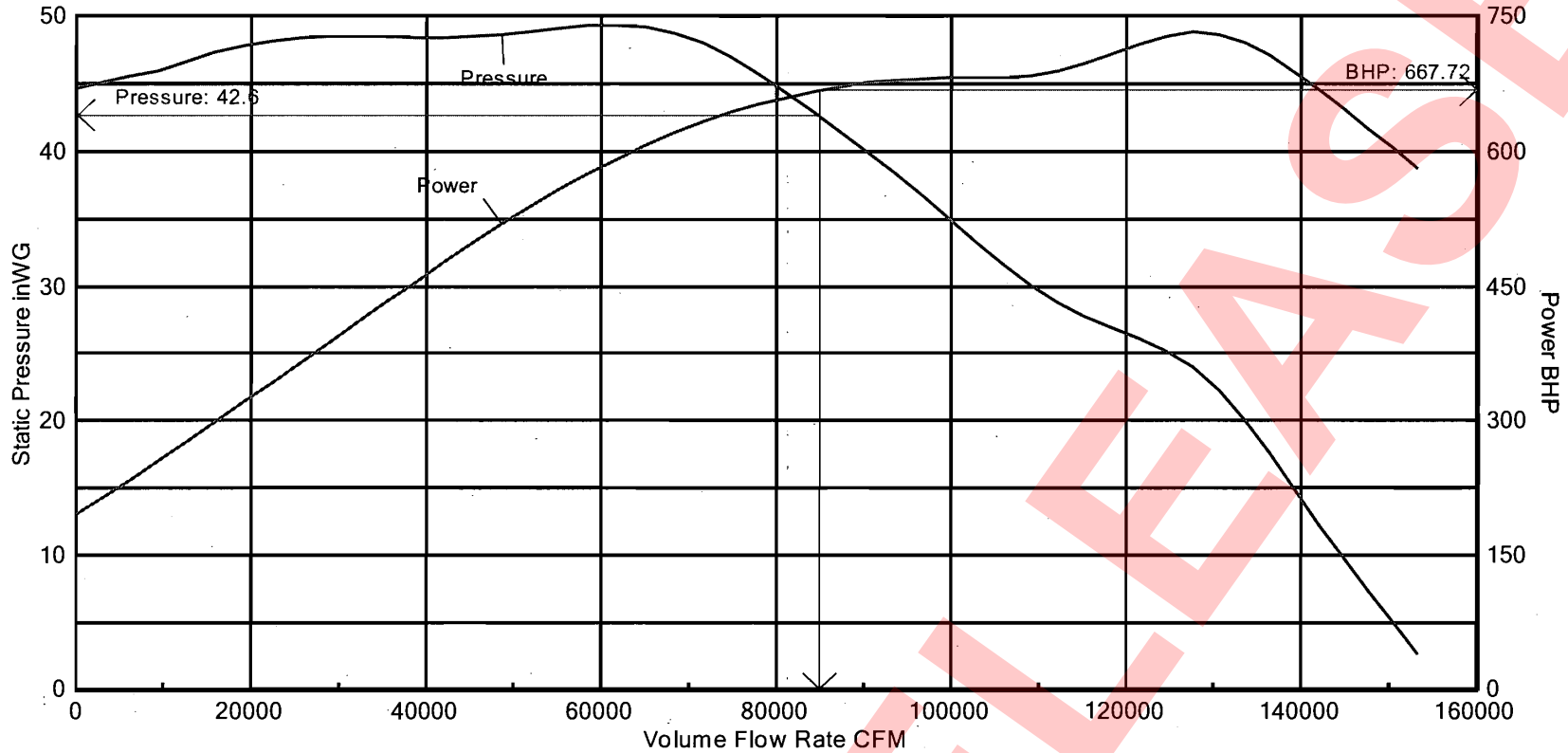
TAG: CP-4143

CONDITION: Operating

Tag Fan: 01C-QC-FN-2002

Description	Selection	Conditions
Design 5740	85036 CFM	42.6 inWG
Size 5712	667.72 BHP	0.0615 lb/cu ft 1780 RPM
Width SISW 94%		157 F 482 ft
		Outlet Velocity 5006 FPM

Test : 15078A3_5914_3650B



ge 7 of 8

Quality Record

APPROVED

Approved

TO:	Cleaver-Brooks	DATE:	5/26/2011	LINEITEM #:	59479.01
T:	Alex Zoubenko	PROJECT:	CP-4143 Southern Co		
PHONE:	(402) 323-6539	TAG:	CP-4143		
FAX:		Tag Fan:	01C-QC-FN-2002		
EMAIL:	azoubenko@cleaverbrook	CONDITION:	Operating		

SUBMITTED BY: David Sprung

Performance

Design:	5740	Static Efficiency:	82.4 %
Nominal Fan Size:	5712	Class at 180 F	HD
Width:	SISW	Max Speed	1800 RPM
Percent Width:	94 %		
Volume Flow Rate:	85036 CFM	Wheel Diameter:	63.28 in
Static Pressure:	42.6 inWG	Peak SP:	49.66 inWG
Outlet Velocity:	5006 FPM	Inlet Pressure:	3.30 inWG
Fan Speed:	1780 RPM	Inlet Velocity:	5760 FPM
Power:	667.72 BHP	VP:	1.282 inWG
Temperature:	157 F	Outlet Area:	16.40 sq ft
Altitude:	482 ft	Inlet Area:	14.25 sq ft
Inlet Air Density:	0.0615 lb/cu ft	SP/VP:	33.23
Tip Speed:	29498 FPM		

Selection Data

33.8 % of max static pressure	Peak Static Pressure is at 38% of max volume flow
54.4 % of max volume flow rate	Max Volume 156414 CFM
89.3 % of max power	Max Power 747.31 BHP
99.6 % of max static eff	Max Static Eff is 83% at 48% of max volume flow
1.1 % speed up available	Test ID: 15078A3_5914_3650B

Sound (Installation type D: Ducted Inlet, Ducted outlet)

Octave Band	1	2	3	4	5	6	7	8
Power Level dB	99	102	105	96	92	87	81	77
Pressure Level dBA	66	79	89	86	84	81	75	69
Total Log Sum dBA 93 at 3.0 ft								

Sound (Installation type B: Free Inlet, Ducted outlet)

Octave Band	1	2	3	4	5	6	7	8
Power Level dB	113	118	122	113	109	104	98	94
Pressure Level dBA	80	95	106	103	101	98	92	86
Total Log Sum dBA 110 at 3.0 ft								

Ratings include the effects of end reflections.

The sound power level ratings shown are in decibels, referred to 10⁻¹² watts.
 The sound level of fan equipment outside the laboratory may vary widely from those levels stated above.
 Does not include effect of motors, drives or other ancillary equipment.

