SPECIAL-PURPOSE STEAM TURBINE
API-612 (5th ed., draft), ISO 10437 DATA SHEETS
U.S. CUSTOMARY UNITS

JOB NO. _____ ITEM NO. _____
PURCHASE ORDER NO. _____
SPECIFICATION NO. _____
REVISION NO. _____ DATE 20-Feb-01
PAGE 1 OF 10 BY D.S. (Elliott)

APPLICABLE TO: ● PROPOSAL ○ PURCHASE ◯ AS-BUILT
FOR _____ UNIT _____
SITE _____ SERIAL NUMBER _____
SERVICE Generator Drive NUMBER REQUIRED ONE
MANUFACTURER Elliott MODEL SQV4 DRIVEN EQUIPMENT ITEM NO. _____
DRIVEN EQUIPMENT TYPE: ○ COMPRESSOR ● GENERATOR ○ OTHER _____
NOTE: INFORMATION TO BE COMPLETED BY: ○ PURCHASER ☐ MANUFACTURER ◯ PURCHASER OR MANUFACTURER

PERFORMANCE

OPERATING POINTS ◯ AS APPLICABLE	TURBINE SHAFT		INLET			~~INDUCTION/EXTRACTION~~			EXHAUST		
	POWER kW	SPEED rpm	FLOW lb/hr	PRESS psig	TEMP °FTT	~~FLOW lb/hr~~	~~PRESS psig~~	~~TEMP °FTT~~	PRESS psig	TEMP °FTT	ENTHALPY BTU/lb
RATED, NORMAL STEAM	11387	6000	300000	850	870				200	567	1303.8
"HIGH" STEAM FLOW	9460	6000	252820	850	870				200	572	1306.1

☐ STEAM RATE, LBS/HP-HR (3.46): _____ NORMAL _____ RATED
☐ POTENTIAL MAXIMUM POWER(3.32) _____

INDUCTION ○ CONTROLLED ○ UNCONTROLLED
EXTRACTION ○ CONTROLLED ○ UNCONTROLLED

STEAM CONDITIONS

	◯ INLET	◯ EXHAUST	◯ EXTRACTION INDUCTION	◯ EXTRACTION INDUCTION	◯ EXTRACTION INDUCTION

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PAGE 3 OF 10 DATE 20-Feb
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MATERIALS-CASINGS & APPURTENANCES:

- ☐ HIGH PRESSURE CASING — ASTM A217, Gr. WC6
- ☐ MID PRESSURE CASING
- ☐ EXHAUST CASING — integral to HP casing
- ☐ STEAM CHEST — integral to HP casing
- ☐ NOZZLE RING — ASTM A-387, Gr.11, Cl.2
- ○ STEAM CONTAMINANTS (11.1.6)
- ○ STEAM PATH COMPONENTS < RC22 (11.1.9)

- ☐ DIAPHRAGM/BLADE CARRIERS — A-517
- ☐ DIAPHRAGM NOZZLES — AISI
- ☐ OTHER

ROTATING ELEMENTS (8)

SHAFT TYPE:

■ INTEGRAL WHEELS ☐ BUILT-UP(8.1.2) ☐ COMBINATION
☐ DOUBLE EXTENDED
☐ NUMBER OF STAGES 4 BEARING SPAN 70 IN.
☐ SHAFT MATERIAL ASTM A-470, Cl. 4
BLADES(BUCKETS): ☐ MAXIMUM TIP SPEED 731 FPM
☐ FINAL STAGE BLADE LENGTH 1.28 IN. MAX. IN.
REMARKS:

☐ SHAFT ENDS: DIAMETER @ COUPLING
○ STRAIGHT ○ TAPER
○ KEYED ○ SINGLE ○ DOUE
○ HYDRAULIC FIT ● INTEGRAL
○ FIELD BALANCING PROVISIONS RE
☐ DESCRIPTION OF FIELD BALANCIN

REMARKS:

	STAGE	STAGE	STAGE	STAGE	STAGE
☐ WHEEL MATERIAL					
☐ BLADE MATERIAL					
☐ BLADE ROOT TYPE					

MAXIMUM CONTINUOUS 6300 RPM TRIP 6600 RPM

MAXIMUM ALLOWABLE 6600 RPM

☐ LATERAL CRITICAL SPEEDS (DAMPED)(9.2)

FIRST CRITICAL	3500 RPM		MODE
SECOND CRITICAL	8500 RPM		MODE
THIRD CRITICAL	RPM		MODE
FOURTH CRITICAL	RPM		MODE

☐ VIBRATION MILS (PEAK TO PEAK)

FIRST CRITICAL RPM

SECOND CRITICAL RPM

THIRD CRITICAL RPM

FOURTH CRITICAL RPM

○ LATERAL ANALYSIS REPORT REQUIRED

○ INDIVIDUAL BODY ○ TRAIN

○ UNDAMPED STIFFNESS MAP REQUIRED

○ TRAIN TORSIONAL ANALYSIS REPORT REQUIRED

◎ TRAIN TORSIONAL PERFORMED BY

☐ CASINGS, NOZZLES & DIAPHRAGMS

☐ MAWP (3.18)(7.1.3)

INLET SECTION 935 PSIG EXH. SECTION 300 PSIG

INDUCTION / EXTRACT. SECTION PSIG

OTHER PSIG

☐ MAX OPERATING TEMP. (3.17)(3.22)

INLET SECTION 900 °F EXHAUST SECTION 750 °F

INDUCTION / EXTRACTION SECTION N/A °F

○ MINIMUM DESIGN METAL TEMPERATURE(11.1.16) °F

○ RELIEF VALVE SETTING: INLET PSIG EXH PSIG

EXTRACTION PSIG OTHER PSIG

☐ HYDROSTATIC TEST PRESSURE (16.3.2.2.1)(16.3.2.2.2)

HP CASING 1550 PSIG MID CASING

EXHAUST CASING 480 PSIG OTHER

○ WELDED NOZZLE RING (7.3.1) NOZZLE RING 75

DIAPHRAGM BLADE ATTACH.: ☐ INTEGRALLY CAST

(7.3.2) ☐ OTHER

DIAPHRAGM AXIAL LOCATION: ■ INDIVIDUALLY ☐ STA

CASING CONNECTIONS

CONNECTION	☐ SIZE	☐ FACING	○ POSTION	◎ FLANGED OR STUDDED (7.2.1)(7.2.3)	○ MATING FLG. & GASKET BY VENDOR (7.2.7.4)	☐ MAXIMUM STEAM FLOW LBS/HR	☐
INLET	10"-900#	RF	SIDE	FLNG			
EXHAUST	18"-300#	RF	DOWN	FLNG			
EXTRACTION							
INDUCTION							

AUX. SCRWD. PIPE CONN.: ○ TAPERED ○ STRAIGHT ○ MAIN CASING JOINT STUDS / NUTS DESIGNED FOR HYD. TENSIONING(7.

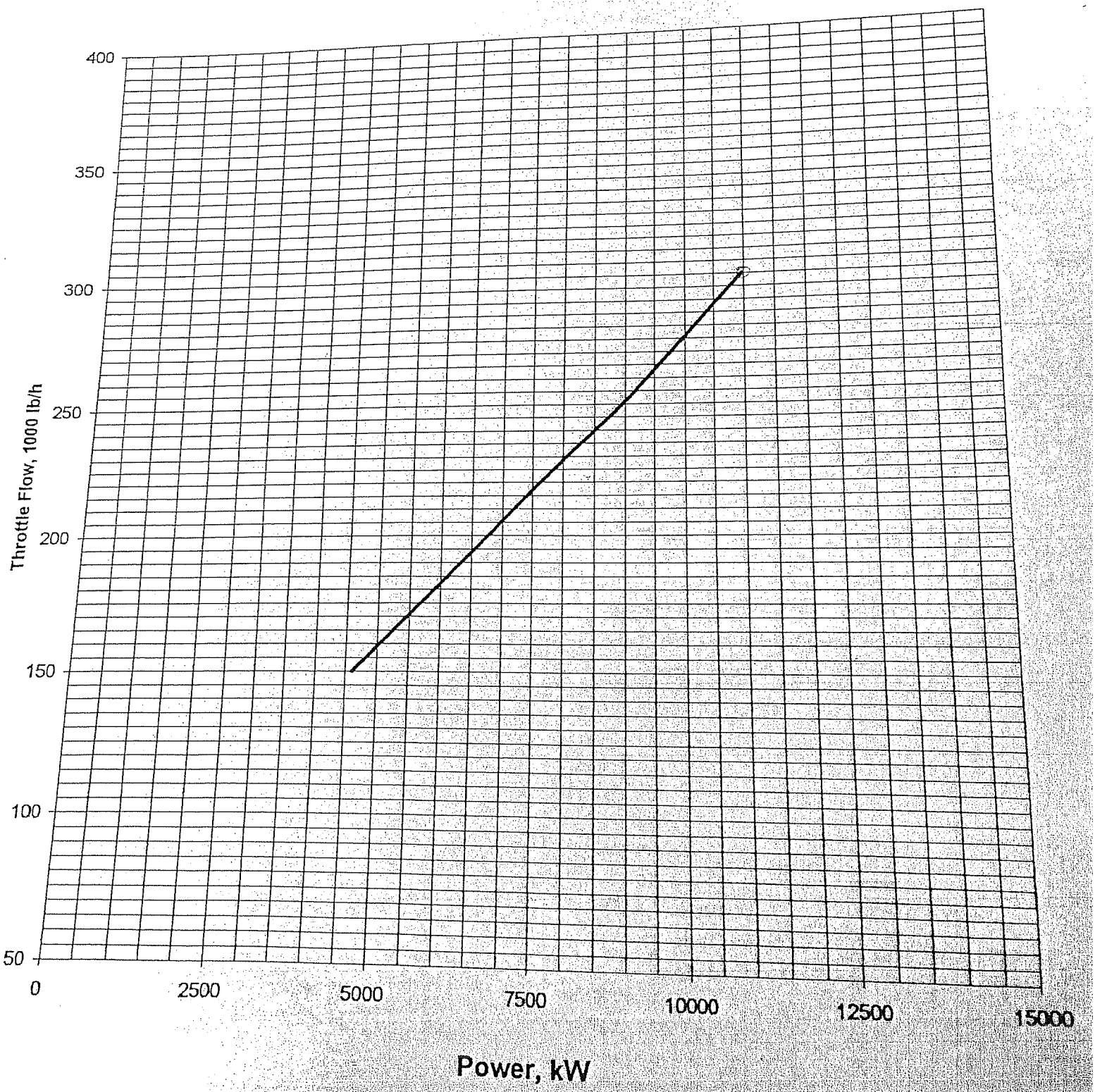
☐ ALLOWABLE FORCES & MOMENTS ROTATION:(VIEWED FROM INLET END)

Approximate Performance

JRLA No. 5377.00 Elliott Prop #J01-603-011

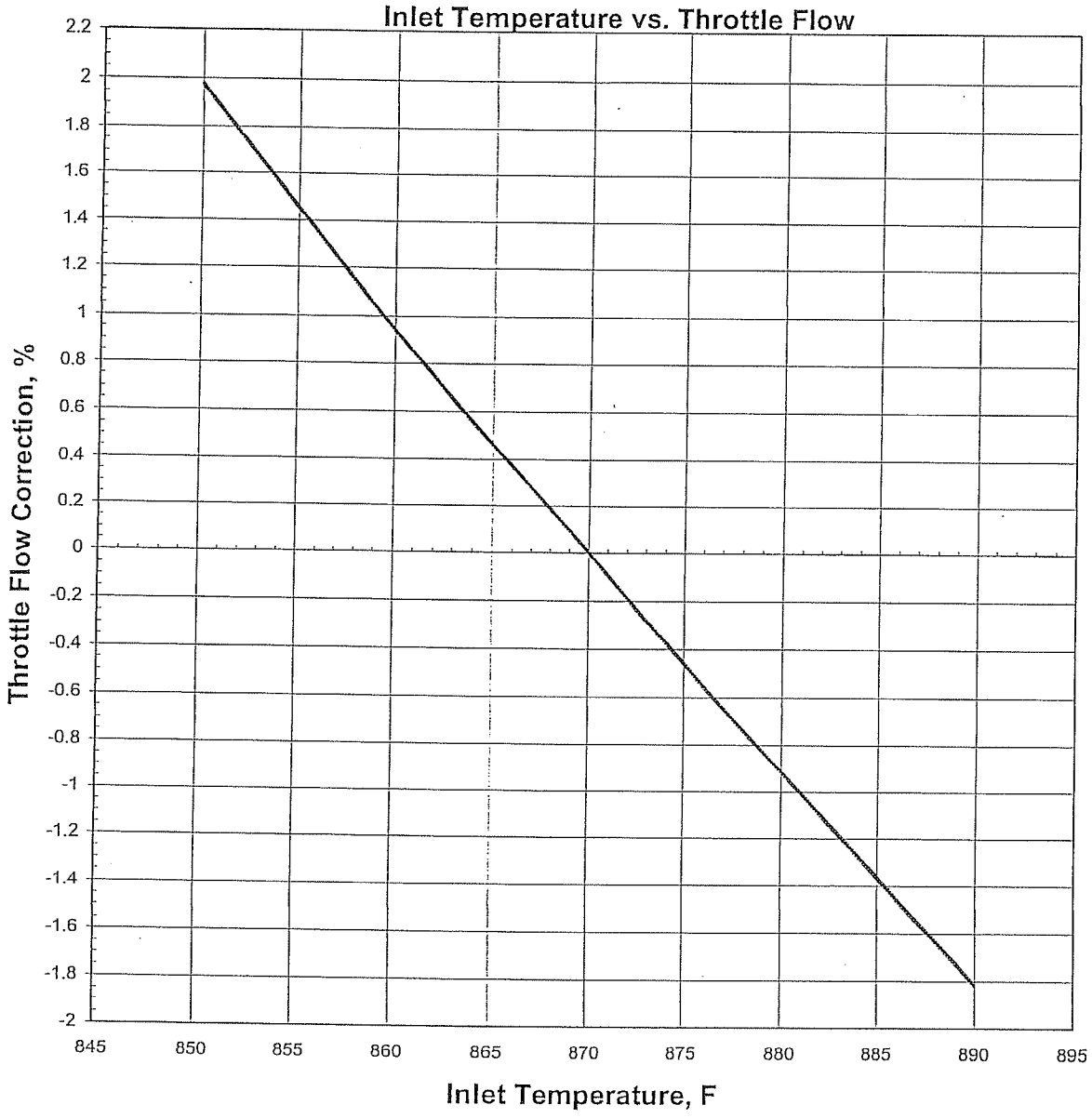
Steam Flow to Throttle vs. Generator Elec. Power

drawn for Normal Steam: 850psig - 870°F - 200 psig, 6000rpm



Steam Flow Correction Curves

Elliott SQV-4 Steam Turbine
SO# E104004



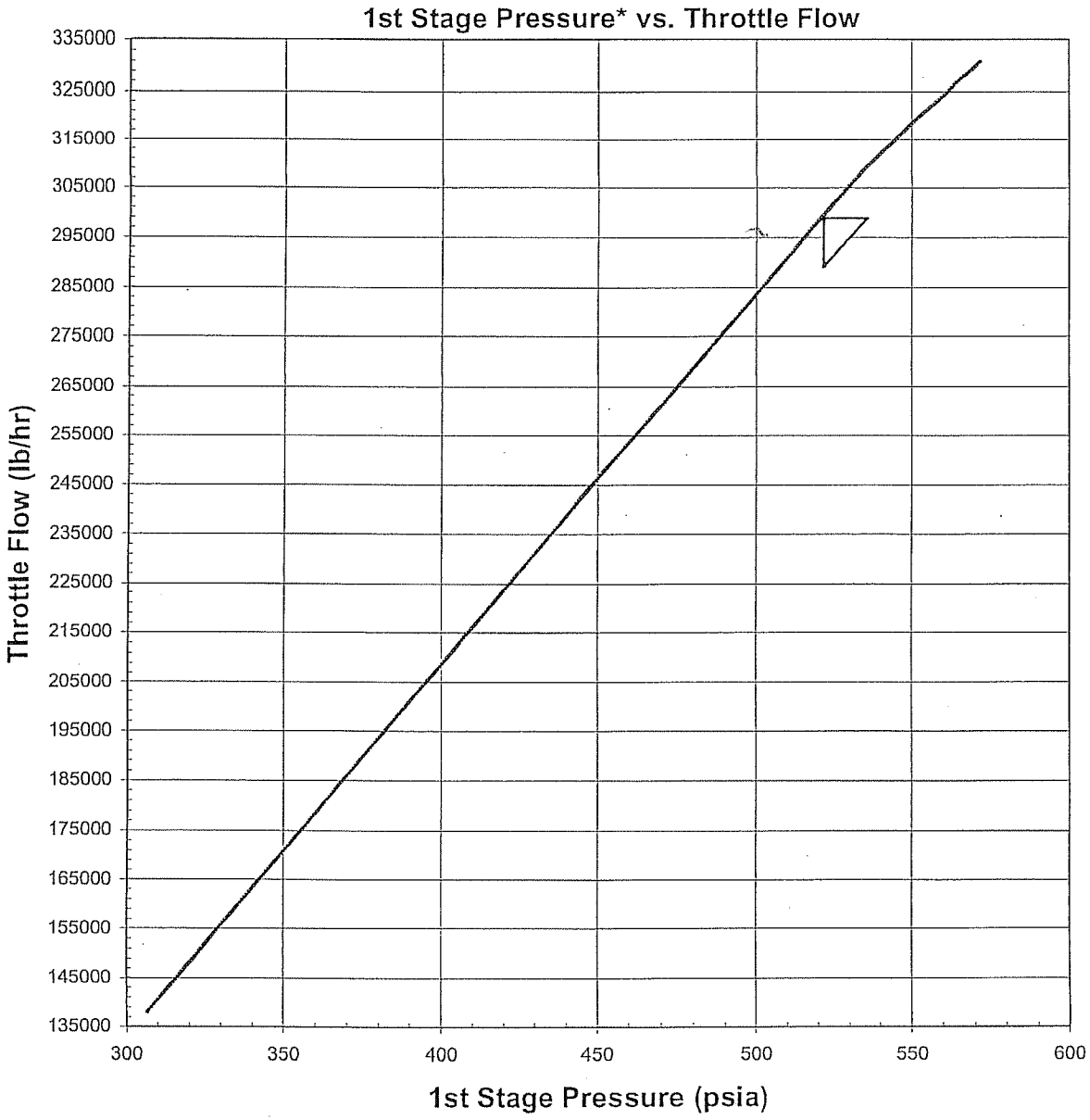
Curve# e104004.tin

SB 5/17/02

FIG. NO. 3-6 PG. NO. 3-32

Approximate Performance

Elliott Turbine, SQV-4



Normal Point:

850 psig / 870 F / 200 psig
5988 rpm
* Curve based on Turbine Shaft end power

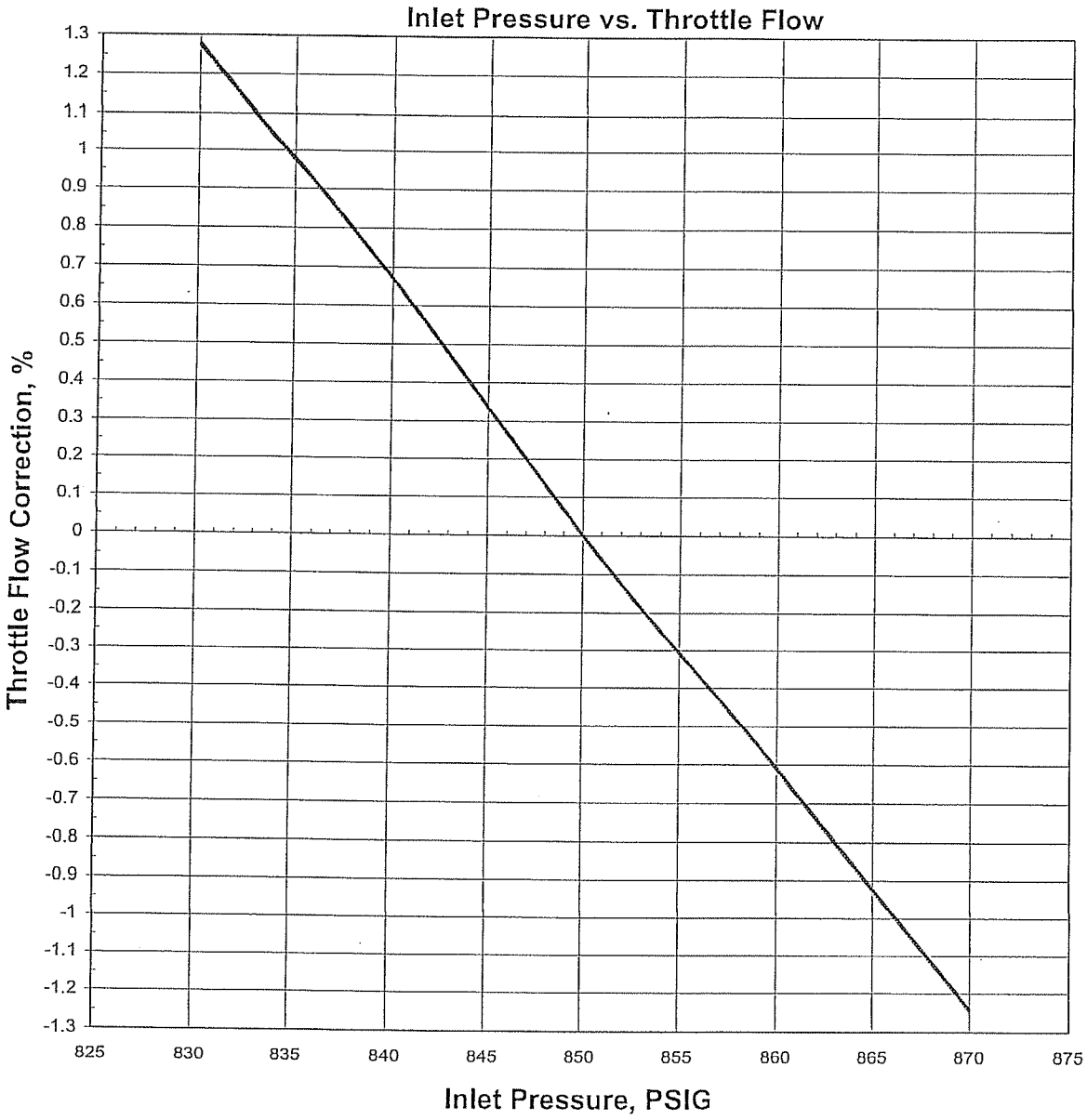
Curve# E104004.p3

SB 5/16/02

FIG. NO. 3-2 PG. NO. 3-28

Steam Flow Correction Curves

Elliott SQV-4 Steam Turbine
SO# E104004



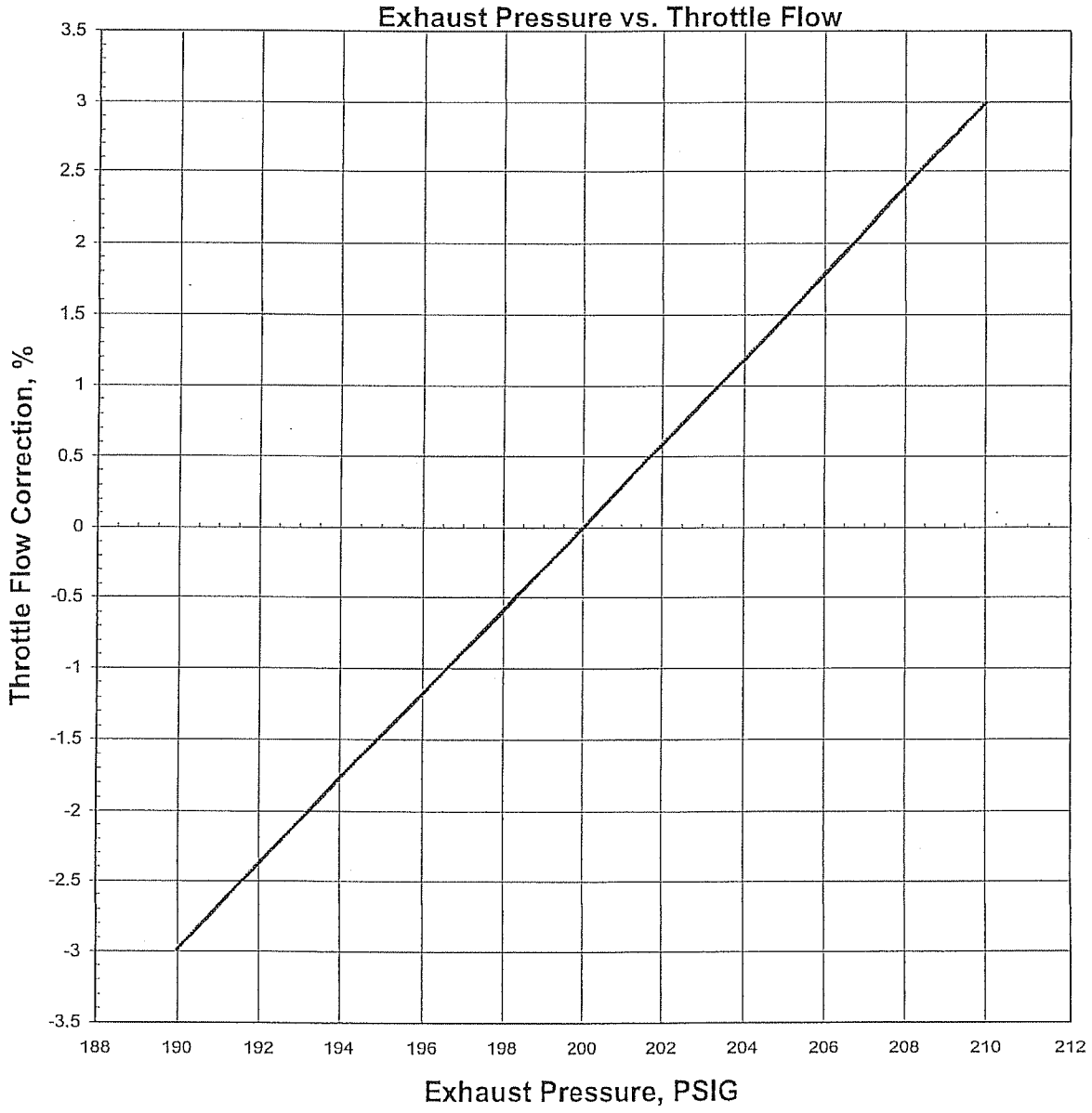
Curve# E104004.pin

SB 5/17/02

FIG. NO. 3-5 PG. NO. 3-31

Steam Flow Correction Curves

Elliott SQV-4 Steam Turbine
SO# E104004



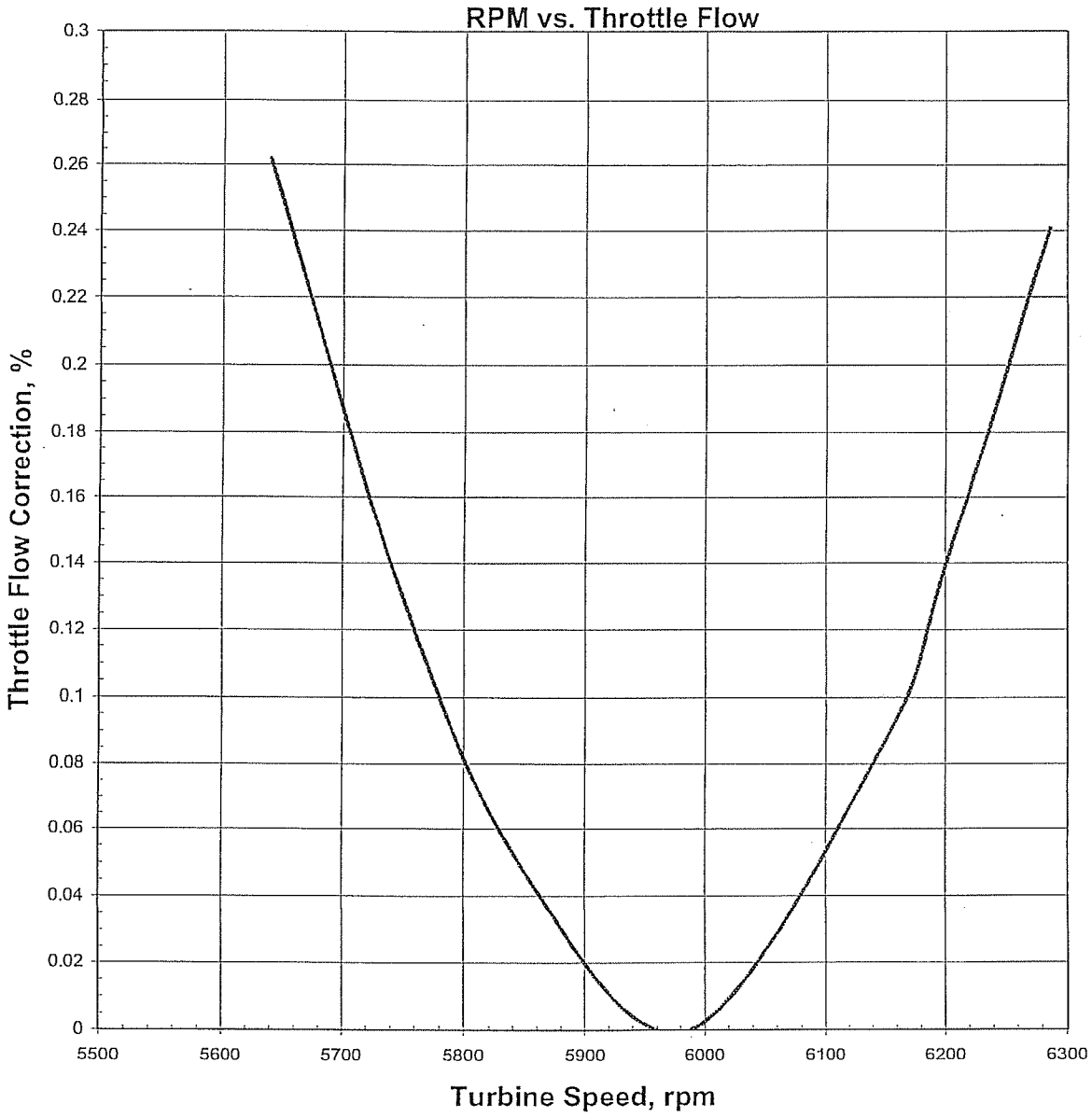
Curve# E104004.pout

SB 5/17/02

FIG. NO. 3-4 PG. NO. 3-30

Steam Flow Correction Curves

Elliott SQV-4 Steam Turbine
SO# E104004



Curve# e104004.rpm

SB 5/17/02

FIG. NO. 3-3 PG. NO. 3-29

COLD START CURVE

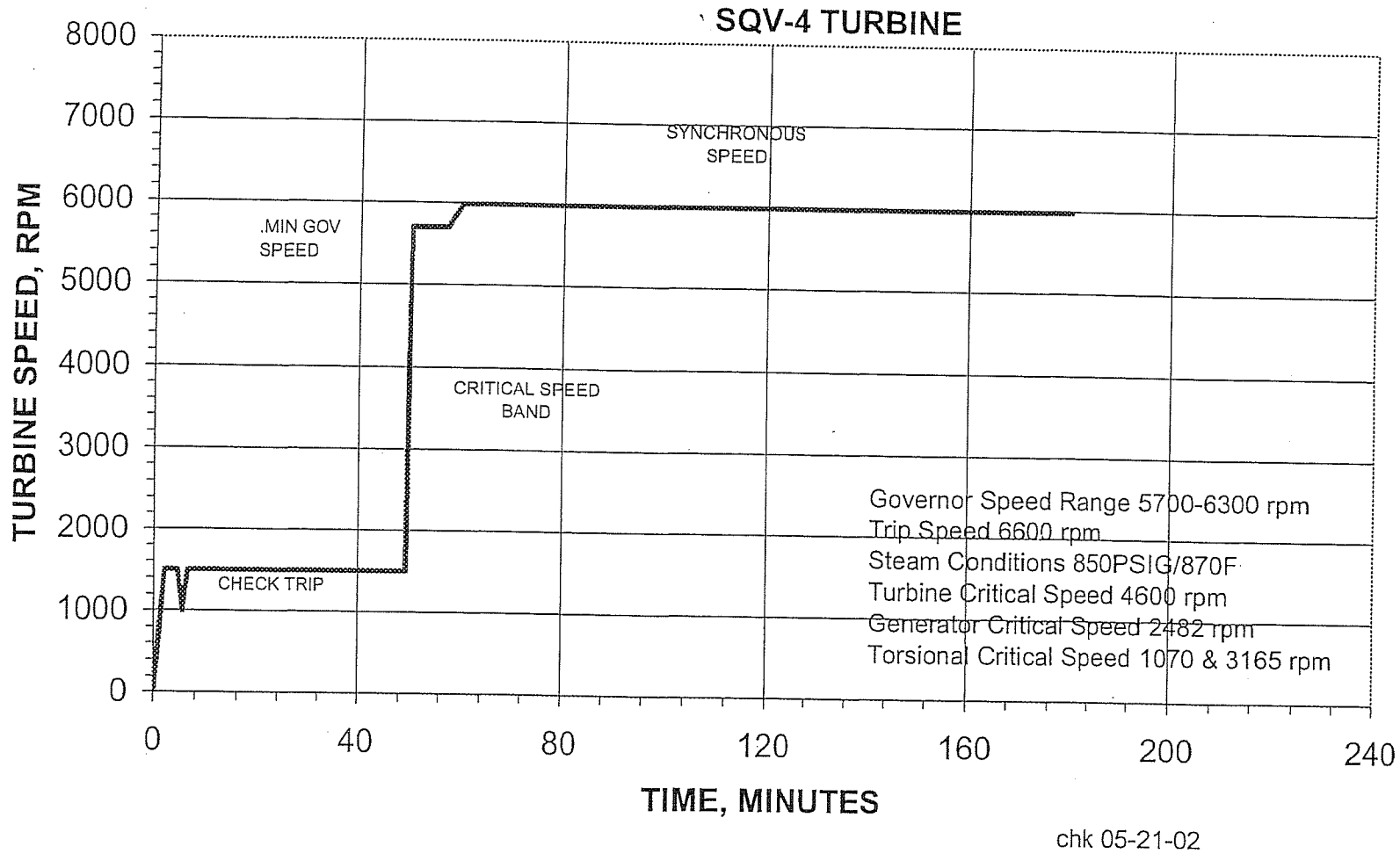


FIG. NO. 3-8 PG. NO. 3-34

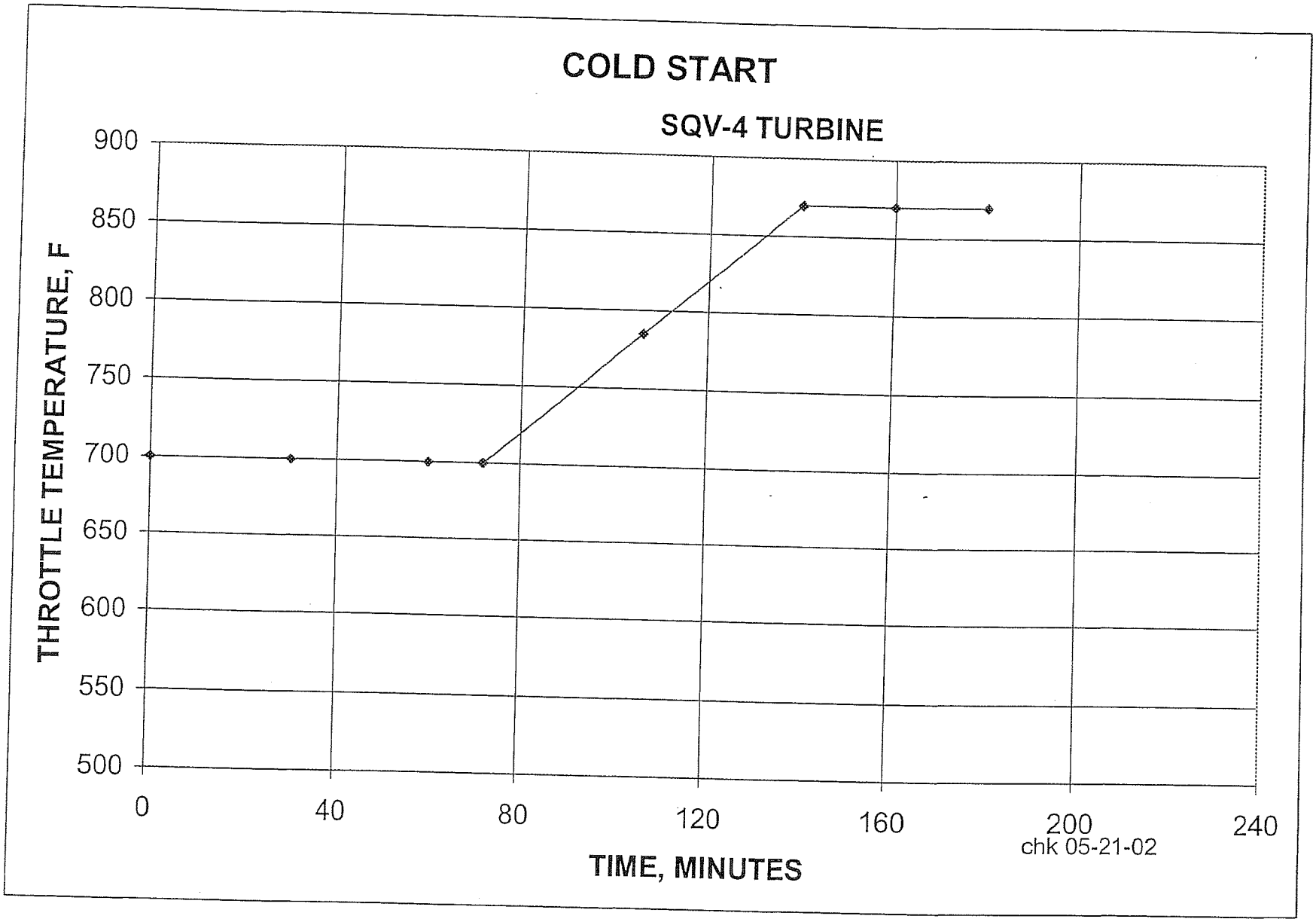
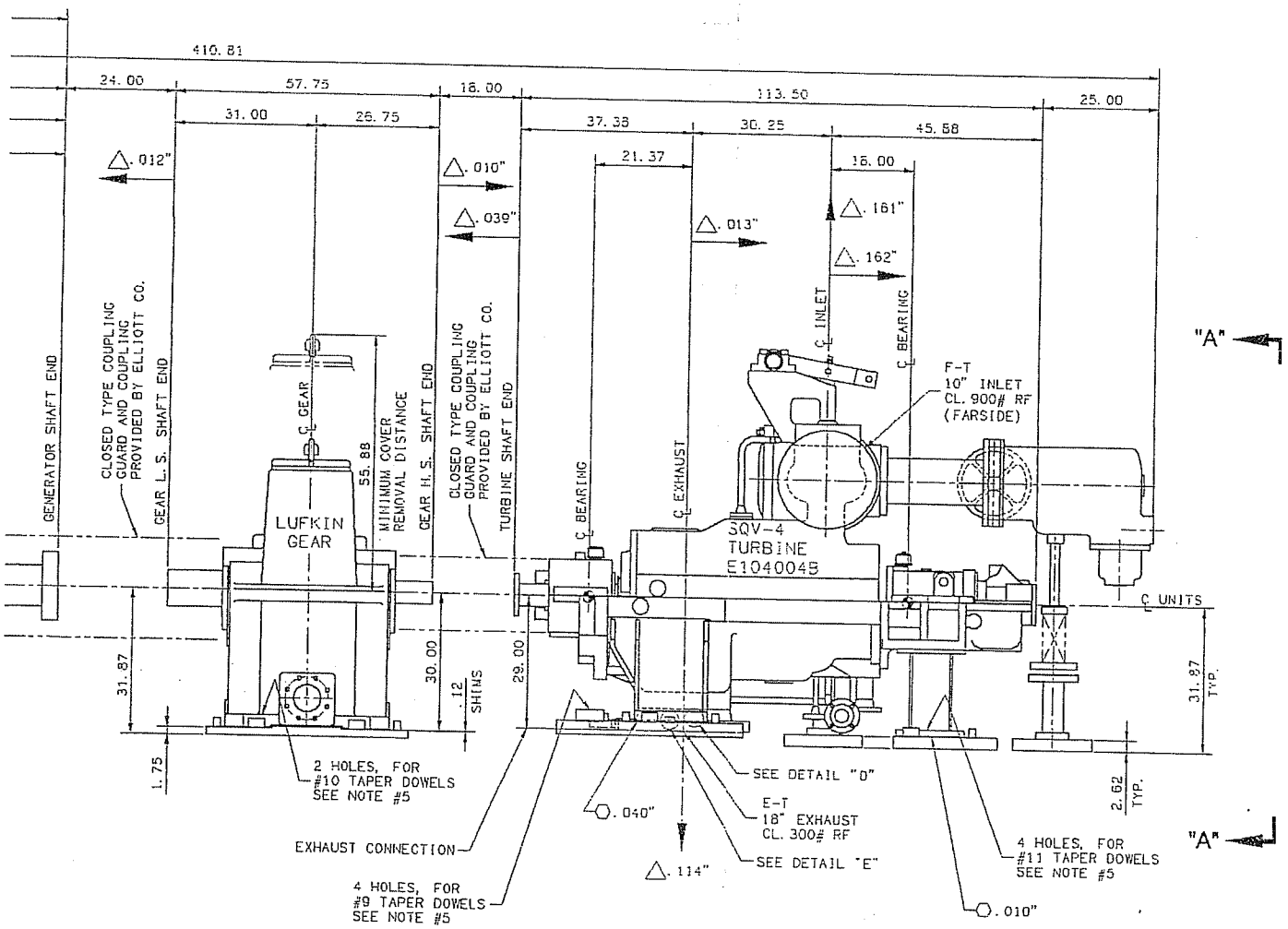


FIG. NO. 3-7 PG. NO. 3-33



PURCHASER IDENTIFICATION:

OUTLINE

SQV-4 TURBINE, GEAR & GENERATOR

DATE 2-23-2001
S. O. E124004B
SCALE NTS
SIMILAR TO
PROCESS SPEC

ASSOCIATE PLANT IDENTIFICATION

SHEET 2 OF 4

ELLIOTT EBARA GROUP

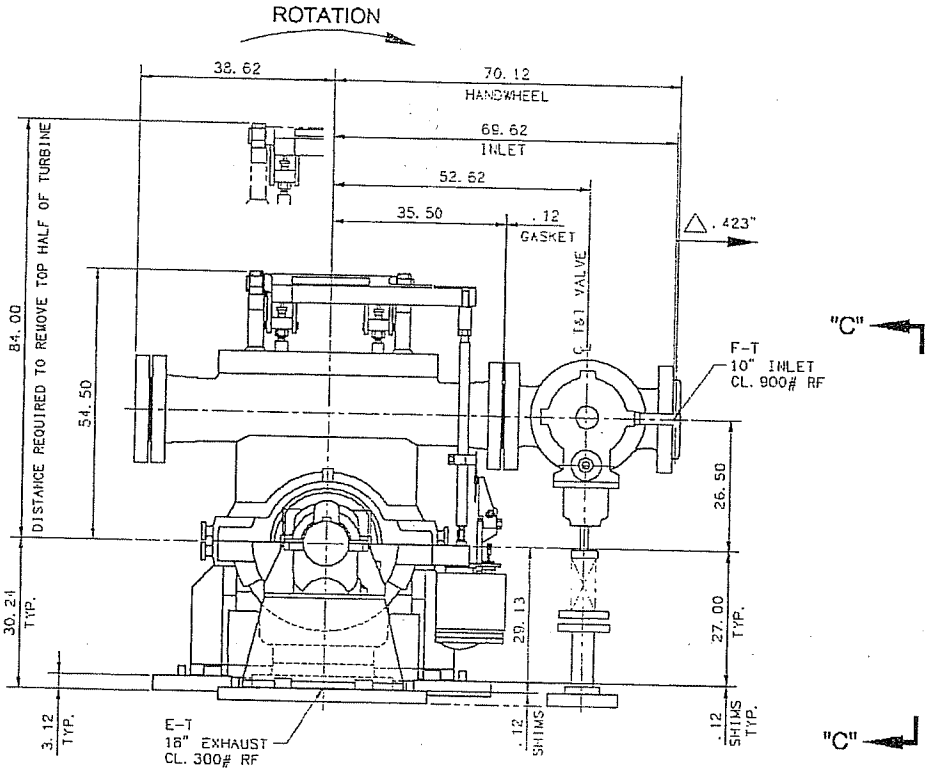
CAD GENERATED DRAWING

WC-EM0338 REV 6

SUPERSEDED BY

SUPERSEDES

FIG. NO. 2-26-1 PG. NO. 2-42



VIEW "A-A"

PURCHASER IDENTIFICATION:

OUTLINE

SQV-4 TURBINE, GEAR & GENERATOR

DATE 2-23-2001	
S.O. E1240048	
SCALE NTS	
SIMILAR TO	
PROCESS SPEC	

ELLIOTT EBARA GROUP

CAD GENERATED DRAWING

WC-EM0338 REV 6

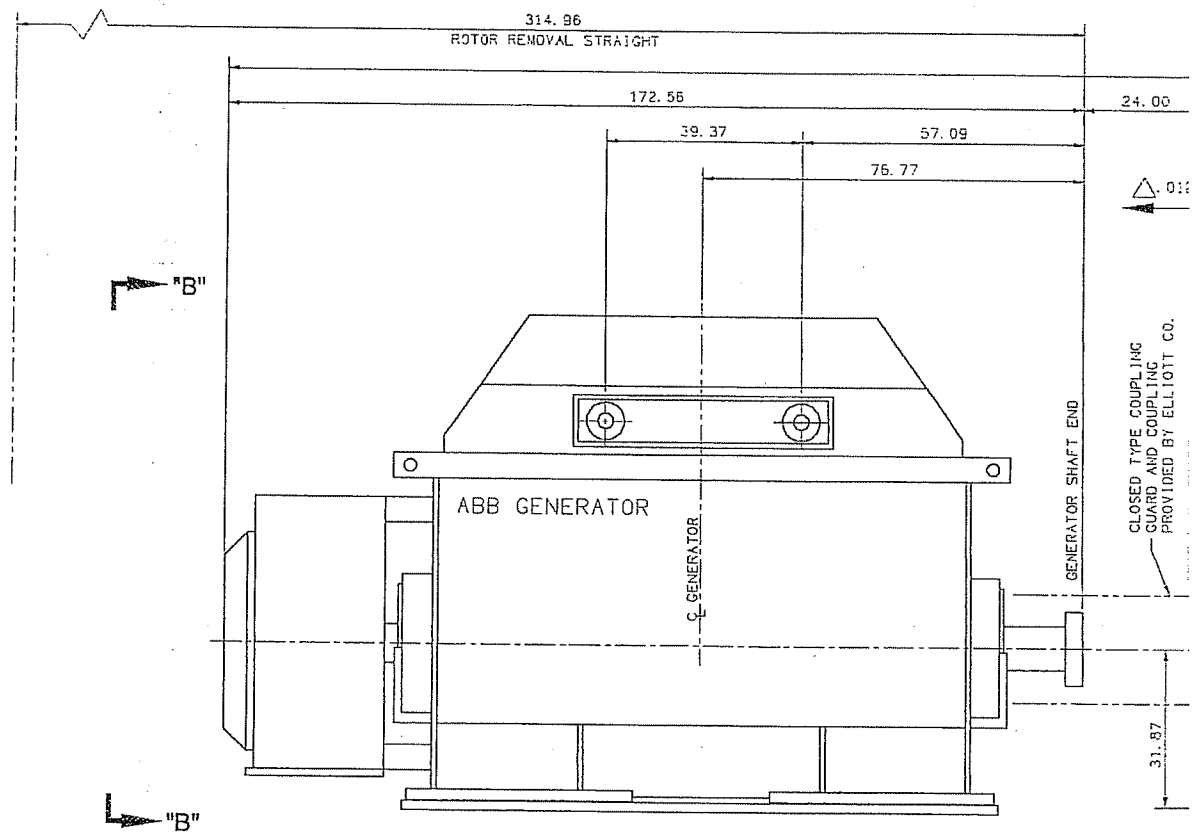
SHEET 4 OF 4

SUPERSEDES

SUPERSEDED BY

FIG. NO. 2-26-3 PG. NO. 2-44

WC-EM0338



CAD GENERATED DRAWING							
△	CHANGE DESCRIPTION	AP	ZONE				
1	REVISED OUTLINE TO SHOW BASEPLATE WAS SOLEPLATES. J. SHUSTER 3-22-2001						
2	REVISED OUTLINE TO SHOW LATEST TURBINE, GEAR & GENERATOR INFORMATION. J. SHUSTER 7-19-2001						
3	REISSUED OUTLINE CERTIFIED FOR ALL MAJOR CONNECTIONS & CONTACT SURFACES. OUTLINE WAS PRELIMINARY. J. SHUSTER 8-21-2001	CP	CB				
4	CERTIFIED DIMENSIONS 410.81, 31.87, 25.00 & .12 WERE 411.05, 32.00, 31.87 & .25 RESPECTIVELY. REVISED SHAFT DAP 24.00 WAS 18.00. ADDED COLD ALIGNMENT & THERMAL GROWTH DIMS. J. SHUSTER 10-16-2001	CP	CB				
5	NO CHANGES THIS SHEET. J. SHUSTER 12-18-2001	CP	CB				
6	CHANGED GENERATOR COOLER CONNECTIONS TO NEAR SIDE JSHUSTER 4-11-02						

8 7 6 5