# SPECIAL PURPOSE STEAM TURBINE SPECIFICATION SHEET ( )

| REV. | 1 | 2 | 3 | MADE | |
|---|---|---|---|---|---|
| BY | | | | | |
| CHKD | | | | CHKD | |
| APVD | | | | APVD | |
| DATE | | | | DATE | |

CLIENT :

PROJECT TITLE :

JOB NO. :

DOC. NO. : ( 1 / 6 )

APPLICABLE TO : ○ PROPOSAL ○ PURCHASE ○ AS BUILT

FOR _____ UNIT _____ ITEM NO : _____

SITE _____ MODEL NO. _____

SERVICE _____ TYPE _____

MANUFACTURER _____ NO. REQUIRED _____ SERIAL NO. _____

NOTE : INDICATES INFORMATION TO BE COMPLETED BY ○ PURCHASER ☐ MANUFACTURER

## OPERATING CONDITIONS

INDICATE GUARANTEE POINT BY (*) _____ STEAM RATE

| | POWER,kW | SPEED, RPM | KG/KW-HR |
|---|---|---|---|
| ☐ RATED | | | |
| ☐ NORMAL | | | |
| ☐ | | | |

☐ STEAM RATES BASED ON OUTPUT SHAFT OF : ☐ TUR ☐ GEAR

EXHAUST ENTHALPY @ RATED POINT _____ KCAL/KG

TEMPERATURE @ RATED POINT _____ $^{o}$C

### SPEEDS

MAX CONTINUOUS _____ RPM, TRIP _____ RPM

CRITICAL (DAMPED) 1'ST _____ RPM, 2'ND _____ RPM

RIGID SUPPORT 1'ST _____ RPM, 2'ND _____ RPM

### STEAM CONDITIONS

| | | |
|---|---|---|
| ○ INLET STEAM | | |
| RATED (NORMAL) | _____ kg/cm$^2$A | _____ $^{o}$C |
| MAXIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |
| MINIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |
| ○ EXHAUST STEAM | | |
| RATED (NORMAL) | _____ kg/cm$^2$A | _____ $^{o}$C |
| MAXIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |
| MINIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |
| ○ EXTRACTION | | |
| RATED (NORMAL) | _____ kg/cm$^2$A | _____ $^{o}$C |
| MAXIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |
| MINIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |

FLOW (kg/hr) _____ NORMAL _____ MAX. _____ MIN

| | | |
|---|---|---|
| ○ ADMISSION STEAM | | |
| RATED (NORMAL) | _____ kg/cm$^2$A | _____ $^{o}$C |
| MAXIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |
| MINIMUM | _____ kg/cm$^2$A | _____ $^{o}$C |

FLOW (kg/hr) _____ NORMAL _____ MAX. _____ MIN

☐ MAX THROTTLE FLOW : _____ kg/hr

☐ MAX FLOW TO CONDENSER _____ mm Hg V

☐ MAX FLOW EXHAUST TEMP. IN OPERATION _____ $^{o}$C

☐ MAX BHP REQUIRED @ MIN INLET/MAX EXH. _____ kW

### DUTY

○ CONTINUOUS ○ INTERMITTENT ○ AUTO START

APPROX. STEAM RATE DESIGN _____ kg/kW.hr

### LOCATION

○ INDOOR ○ HEATED ○ UNDER ROOF

○ OUTDOOR ○ UNHEATED ○ PARTIAL SIDE

○ GRADE ○ MEZZANIE

○ WINTERIZATION ○ TROPICALIZATION

### SITE DATA

○ ELEVATION _____ m ○ BAR : _____ kg/cm$^2$A

○ TEMPERATURE _____ $^{o}$C SUMMER, _____ $^{o}$C WINTER

○ RELATIVE HUMIDITY _____ %, Design Wet Bulb : _____ $^{o}$C

UNUSUAL CONDITIONS

○ DUST ○ FUMES _____

○ OTHER _____

## CONSTRUCTION FEATURES

### TURBINE TYPE

○ HORIZONTAL ○ VERTICAL ☐ SINGLE VALVE ☐ MULTI VALVE

☐ NO. OF STAGES _____ IMPULSE _____ REACTION

☐ OVERSPEED TRIP DEVICE ____ MECH. ____ ELECT. ____ HYD.

○ CASING SPLIT _____ HORIZONTAL _____ VERTICAL

☐ ROTOR ____ SOLID ____ BUILT-UP _____ COMBINATION

☐ ROTATION, VIEWED FROM GOV. ____ CW _____ CCW

☐ EXHAUST FLOW _____ SINGLE _____ DOUBLE

### GOVERNOR TYPE

○ ELECTRONIC ○ HYDRAULIC ○ OIL RELAY ⬭ DIRECT ACT.

○ NEMA CLASS _____

○ GOVERNOR MFR. _____ ☐ MODEL _____

☐ SYNC. MOTOR _____ kW ☐ OIL COOLER ☐ OIL HEATER

☐ POWER CYLINDER ○ GOVERNOR PURGE REQUIRED

○ STAINLESS STEEL PINS & BUSHING IN GOV. LINKAGE

○ ISOCRONOUS CONTROL ○ SPEED DROP CONTROL

☐ SPEED CHANGER ____ MANUAL ____ PNEUM. ____ ELECTR.

☐ SPEED RANGE : _____ RPM @ _____ kg/cm$^2$G or mA

_____ RPM @ _____ kg/cm$^2$G or mA

### VALVES

| | CAM LIFT | BAR LIFT | GRID VALVE |
|---|---|---|---|
| ☐ NO. AUTO GOV. VALVES | | | |
| ☐ NO. AUTO EXTR. VALVES | | | |
| ☐ NO. AUTO ADM. VALVES | | | |

○ SEPARATE TRIP & THROTTLE VALVE : ____ HYD. ____ MECH

○ REMOTE TRIP ○ MANUAL ACTUATION

○ SPRING SUPPORT REQ'D ○ MANUAL EXCERSISER

○ EXTRACTION NON-RETURN VALVE : ____ HYD. ____ MECH

○ REMOTE TRIP ○ MANUAL ACTUATION

○ ADMISSION STOP VALVE : ____ HYD. ____ MECH

○ REMOTE TRIP ○ MANUAL ACTUATION

○ Auto Valve Arranged Close On Trip : ____ YES ____ NO

### BLADES (BUCKETS) :

☐ Tip Speed m/s @ Max. Cont.: 1 st Stg _____ Final Stg _____

☐ Final Stage Blade Length _____ mm, Base Dia. _____ mm

☐ Nozzle Ring : _____ % Admission ____ Welded ____ Removable

☐ Blade Root : 1 st Stg ____ Dove tail ____ "T" ____ Fir Tree

Final Stg ____ Dove tail ____ "T" ____ Fir Tree

☐ Shrouds : _____ Welded _____ Riveted _____ Wire Damp

JOB NO. : _____ ITEM NO. : _____

**SPECIAL PURPOSE STEAM TURBINE**
**SPECIFICATION SHEET (CONTINUED)**

DOC. NO. : _____ ( 2 / 6 )

MADE BY : _____ REV. : _____ DATE : _____

## CONSTRUCTION FEATURES

### BEARING HOUSING CONSTRUCTION

☐ TYPE (SEPARATE, INTEGRAL) _____ SPLIT _____

☐ MATERIAL _____

### RADIAL BEARINGS

☐ TYPE _____ L/D _____ DIA.(mm) _____

☐ AREA ($cm^2$) _____ LOADING ($kg/cm^2$), ACT. _____ ALLOW. _____

### THRUST BEARING

☐ LOCATION _____ TYPE _____

☐ MFR. _____ AREA ($cm^2$) _____

☐ LOADING ($kg/cm^2$), ACT. _____ ALLOW. _____

### PACKING TYPE

☐ INTERSTAGE GLAND SEALS

☐ END GLAND SEALS _____ NO. PER BOX _____

☐ △ P PER SEAL _____ $kg/cm^2$ ☐ MATERIAL _____

○ INSULATION _____ ○ JACKET MAT'L _____

☐ TOTAL EXPECTED LEAKAGE _____ kg/hr

☐ LABYRINTH TYPE _____ STATIONARY _____ ROTATING

### GLAND SEALING SYSTEM

○ GLAND CONDENSER W/MOUNTING FEET REQ'D

○ STEAM EJECTOR REQ'D _____ $kg/cm^2$ G _____ $^{O}C$

○ VACUUM DEVICE REQ'D ○ COMPOUND PRES. GAGE REQ'D

○ AUTO. PRESSURE CONTROL VALVE (Motive Steam / Sealing Steam)

○ GLAND COND. DRAIN: _____ Loop Seal _____ Vertical Leg

_____ Other _____

☐ MINIMUM COND. DRAIN HEIGHT _____ mm

○ RELIEF VALVE ON SEALING STEAM HEADER

### CAPABILITIES

☐ MAX STEAM THRU INLET VALVE _____ kg/hr 1)

☐ MAX STEAM THRU EXHAUST VALVE _____ kg/hr 1)

☐ STEAM INLET PARTS

MAX ALLOW. PRESS. _____ $kg/cm^2$ G _____ $^{O}C$

☐ EXHAUST END CASING

MAX ALLOW. PRESS. _____ $kg/cm^2$ A or mmHg V

MAX ALLOW. TEMP. _____ $^{O}C$

MAX EXPECTED TEMP. DURING NO LOAD RUN IN _____ $^{O}C$

☐ SENTINEL WARNING VALVE SET @ _____ $kg/cm^2$ G

☐ HYDROSTATIC TEST PRESSURE

STEAM INLET PARTS _____ $kg/cm^2$ G

EXHAUST END _____ $kg/cm^2$ G

☐ FUTURE POTENTIAL MAX. HORSE POWER _____ kW

WITH MINOR MODIFICATION : _____

### TURBINE MATERIALS

☐ HIGH PRESSURE CASING _____

☐ EXHAUST CASING _____ ☐ MID CASING _____

☐ NOZZLES _____ ☐ BLADES _____

☐ WHEELS _____ ☐ SHAFT _____

☐ STEAM CHEST _____

☐ DIAPHRAGMS _____

☐ NOZZLE RINGS _____

☐ SHROUDS _____

☐ GOV. VALVE TRIM _____

☐ LABYRINTH SEALS _____

☐ SHAFT MATERIAL UNDER SEALS _____

☐ _____ Applied by _____ Spraying _____ Plating _____ Sleeve

### ROTOR

☐ BEARING SPAN _____ mm

☐ SHAFT DIA. (mm) @ 1st DISC _____ @ END GLAND SEAL _____

### MAIN CONNECTIONS

| | SIZE | ANSI RATING | FACING | POSITION |
|---|---|---|---|---|
| ☐ INLET | | | | |
| ☐ EXHAUST | | | | |
| ☐ EXTRACTION | | | | |
| ☐ ADMISSION | | | | |

### ALLOWABLE FORCES AND MOMENTS

| | INLET Force, Moment | | EXHAUST Force, Moment | | EXTR./ADM Force,Mom't | |
|---|---|---|---|---|---|---|
| | kg | kg-m | kg | kg-m | kg | kg-m |
| ☐ PARALLEL TO SHAFT | | | | | | |
| ☐ VERTICAL | | | | | | |
| ☐ HORIZ. 90 $^{O}$ | | | | | | |

### OTHER CONNECTIONS

| | NO. | SIZE | ANSI RATING | FACING |
|---|---|---|---|---|
| ☐ LUBE OIL INLET | | | | |
| ☐ LUBE OIL OUTLET | | | | |
| ☐ GLAND COND'R CONN. | | | | |
| ☐ STAGING DRAIN | | | | |
| ☐ STEAM RING DRAIN | | | | |
| ☐ T & T VALVE H.P. STEAM LEAKOFF | | | | |
| ☐ T & T VALVE L.P. STEAM LEAKOFF | | | | |
| ☐ T & T VALVE ABOVE SEAT DRAIN | | | | |
| ☐ T & T VALVE BELLOW SEAT DRAIN | | | | |
| ☐ COOLING WATER CONN. | | | | |
| ☐ PURGE FOR BEARING HOUSING | | | | |
| ☐ EXHAUST CONN. | | | | |

### BASE PLATES & SOLE PLATES

○ BASE PLATE BY _____

○ DECKED WITH NON SKID DECK PLATE ○ OPEN CONSTRUCTION

○ DRIP RIM _____ WITH OPEN DRAIN _____

○ UNDER TURBINE ONLY _____ OTHER _____

○ SOLE PLATE BY _____

○ HORIZ. ADJUSTING SCREWS FOR EQUIPMENT _____

○ FURNISH S.S. SHIMS

○ FOUNDATION BOLTS FURN BY : _____ VENDOR _____ PURCH.

☐ LEVELING (CHOCK) BLOCKS REQ'D

### REFERENCE SPECIFICATIONS :

○ API 612 SPECIAL PURPOSE STEAM TURBINE

○ _____

○ _____

○ _____

**SPECIAL PURPOSE STEAM TURBINE**
**SPECIFICATION SHEET (CONTINUED)**

JOB NO. : _____ ITEM NO. : _____
DOC. NO. : _____ ( 3 / 6 )
MADE BY : _____ REV. : _____ DATE : _____

## UTILITIES

COOLING WATER

| | NORMAL | MAX. | DESIGN |
|---|---|---|---|
| ○ SUPPLY PRESS. , kg/cm$^2$ G | | | |
| ○ SUPPLY TEMP. , $^O$C | | | |
| ○ PRESSURE DROP, kg/cm$^2$ | | | |

○ MAX. TEMP. RISE ALLOWED _____ $^O$C
□ QUANTITY REQUIRED
_____ m$^3$/hr L/D FOR _____
_____ m$^3$/hr L/D FOR _____

AUXILIARY STEAM SUPPLY

| | NORMAL | MAX. | DESIGN |
|---|---|---|---|
| ○ SUPPLY PRESS. , kg/cm$^2$ G | | | |
| ○ SUPPLY TEMP. , $^O$C | | | |

□ QUANTITY REQUIRED
_____ kg/hr L/D FOR _____
_____ kg/hr L/D FOR _____

INSTRUMENT AIR SUPPLY
○ SUPPLY PRESS. , kg/cm$^2$ G _____ _____ _____

AUXILIARY MOTORS
○ _____ Volts ____ Phase _____ Hz

## INSTRUMENTATION

GAUGE READOUT IN □ ENGLISH □ SI □ DUAL □ OTHER _____
NOTE : □ SUPPLIED BY VENDOR ○ SUPPLIED BY PURCHASER △ LOCATED ON A MACHINE MOUNTED INSTRUMENT BOARD

PRESSURE GAGE REQUIREMENTS

| FUNCTION | LOCALLY MOUNTED | LOCAL PANEL | FUNCTION | LOCALLY MOUNTED | LOCAL PANEL |
|---|---|---|---|---|---|
| LUBE OIL PUMP DISCHARGE _____ | □ ○ △ | □ ○ | 1st STAGE STEAM _____ | □ ○ △ | □ ○ |
| LUBE OIL FILTER △ P _____ | □ ○ △ | □ ○ | STEAM CHEST _____ | □ ○ △ | □ ○ |
| LUBE OIL SUPPLY _____ | □ ○ △ | □ ○ | EXHAUST STEAM _____ | □ ○ △ | □ ○ |
| GOV. CONTROL OIL _____ | □ ○ △ | □ ○ | EXTRACTION STEAM _____ | □ ○ △ | □ ○ |
| GOV. CONTROL OIL △ P _____ | □ ○ △ | □ ○ | STEAM EJECTOR _____ | □ ○ △ | □ ○ |
| COUPLING OIL △ P _____ | □ ○ △ | □ ○ | STEAM SEAL _____ | □ ○ △ | □ ○ |
| MAIN STEAM INLET _____ | □ ○ △ | □ ○ | _____ | □ ○ △ | □ ○ |

TEMPERATURE GAGE REQUIREMENTS

| FUNCTION | LOCALLY MOUNTED | LOCAL PANEL | FUNCTION | LOCALLY MOUNTED | LOCAL PANEL |
|---|---|---|---|---|---|
| LUBE OIL DISCHARGE FROM EACH | □ ○ △ | □ ○ | COOLING OIL INLET & OUTLET _____ | □ ○ △ | □ ○ |
| TURBINE JOURNAL BEARING | □ ○ △ | □ ○ | STEAM INLET _____ | □ ○ △ | □ ○ |
| TURBINE THRUST BEARING ____ | □ ○ △ | □ ○ | STEAM EXHAUST _____ | □ ○ △ | □ ○ |
| GEAR JOURNAL BEARING ____ | □ ○ △ | □ ○ | _____ | □ ○ △ | □ ○ |

ALARMS & SHUTDOWN FUNCTIONS

| | FUNCTION | PRE ALARM | TRIP | | FUNCTION | PRE ALARM | TRIP |
|---|---|---|---|---|---|---|---|
| □ ○ | LOW LUBE OIL PRESS. EACH LEVEL | | | □ ○ | TURBINE VIBRATION | | |
| □ ○ | HI OIL FILTER | | | □ ○ | TURBINE AXIAL POSITION | | |
| □ ○ | AUX. LUBE OIL PUMP START | | | □ ○ | TRIP & THROTTLE VALVE POSITION | | |
| □ ○ | HI LUBE OIL OUTLET TEMP. | | | □ ○ | HI TURBINE STEAM SEAL LEAKAGE | | |
| □ ○ | LOW CONTROL OIL PRESSURE | | | □ ○ | HI TURBINE EXHAUST PRESSURE | | |
| □ ○ | _____ | | | □ ○ | HI TURBINE EXTRACTED PRESSURE | | |
| □ ○ | _____ | | | □ ○ | TURB. OVERSPEED TRIP OPERATION | | |

MISCELLANEOUS INSTRUMENTATIONS

□ ○ TURBINE SPEED PICK UP DEVICE □ ELECTRONIC □ OTHER ; _____
□ ○ TURBINE SPEED INDICATORS
TURBINE SPEED INDICATORS LOCATED ON : ____ LOCAL PANEL ____ MAIN BOARD TYPE : ____ DIGITAL ____ DIAL GAGE
□ ○ REMOTE HAND SPEED CHANGER-MOUNTED ON : ____ LOCAL PANEL ____ CONTROL ROOM
□ ○ ALARM HORN & ACKNOWLEDGEMENT SWITCH ON : ____ LOCAL PANEL ____ CONTROL ROOM
□ ○ _____ _____
_____ _____
_____ _____
_____ _____

JOB NO. : _____ ITEM NO. : _____
DOC. NO. : _____ ( 4 / 6 )
MADE BY : _____ REV. : _____ DATE : _____

# SPECIAL PURPOSE STEAM TURBINE
## SPECIFICATION SHEET (CONTINUED)

### COUPLING

- ○ MOUNT 1/2 COUPLING ☐ TYPE _____
- ☐ MFR. _____
- ☐ SPACER REQ'D _____
- ○ COUPLING FURNISHED BY _____
- ☐ KEYED (1) OR (2); OR HYDR. FIT _____
- ☐ CPLG. COEF. FRICTION: _____ GEAR PITCH DIA.(mm): _____
- TURBINE SHAFT : ____ TAPER ____ CYLIND'L DIA.(mm): _____
- GENERATOR SHAFT: ____ TAPER ____ CYLIND'L DIA.(mm): _____
- COUPLING GUARD : ____ MFR. STD. ____ OTHER
- ☐ LUBRICATION REQ'D ____ YES ____ NO

### COMPOSITE TORSIONAL ANALYSIS

- ○ REQUIRED ○ BY : _____

### LATERAL CRITICAL SPEED ANALYSIS

- ○ REQUIRED ○ BY : _____

### SHOP INSPECTION AND TESTS

| | REQ'D | WITNESS |
|---|---|---|
| ○ SHOP INSPECTION | ○ | ○ |
| ○ HYDROSTATIC(PIPING,CASING,CONDENSER) | ○ | ○ |
| ○ BLADE SHAKER (STATIC) ____ ROWS | ○ | ○ |
| ○ ROTOR BALANCE: ____ VACUUM PIT ____ STD. | ○ | ○ |
| ○ ROTOR THERMAL STABILITY | ○ | ○ |
| ○ MECHANICAL RUN : ____ W/JOB CPLG. 1/2 | ○ | ○ |
| ○ RUN SPARE ROTOR ____ W/JOB CPLG. 1/2 | ○ | ○ |
| ○ FUNCTIONAL TEST : ____ T & T VALVE | ○ | ○ |
| ____ TURNING GEAR | ○ | ○ |
| ____ GLAND CONDENSER | ○ | ○ |
| ____ SEALING DEVICE | ○ | ○ |
| ____ LUBE OIL SYSTEM | ○ | ○ |
| ○ GOVERNOR STABILITY | ○ | ○ |
| ○ TURBINE RUN AT OVERSPEED AND TRIP | ○ | ○ |
| ○ USE SHOP LUBE SYSTEM | ○ | ○ |
| ○ USE JOB LUBE SYSTEM | ○ | ○ |
| ○ USE JOB VIBRATION & DISPL. PROBES ETC. | ○ | ○ |
| OSCILATOR-DEMODULATORS & MONITOR | ○ | ○ |
| ○ USE SHOP VIBRATION PROBES ETC. | ○ | ○ |
| ○ X-Y-Y" PLOT | ○ | ○ |
| ○ CHECK BEARING & SEALS AFTER TEST | ○ | ○ |
| ○ NOISE LEVEL TEST | ○ | ○ |
| ○ PREPARATION FOR SHIPMENT | ○ | ○ |
| ○ FM TAPE RECORDING (VIBRATION) | ○ | ○ |
| ○ CLEANLINESS INSPECTION (API 612) | ○ | ○ |
| ○ HARDNESS TEST (API 612) | ○ | ○ |

### OIL REQUIREMENTS

| | CONTROL OIL | LUBE OIL |
|---|---|---|
| ☐ MAX. QUANTITY (lt/min) | | |
| ☐ PRESSURE, kg/cm$^2$ G | | |
| ☐ TEMPERATURE $^{O}$C | | |
| ☐ TOTAL HEAT REJECTED, kcal/hr | | |

- ○ OIL REQUIRED FOR ____ T & T VALVE ____ HYD. NON-RETURN VALVE & (ADMISSION STOP VALVE)
- ☐ OIL VISCOSITY _____ cSt @ 32 $^{O}$C

### VIBRATION DETECTORS

- ○ TYPE _____ ☐ MODEL _____
- ○ MFR. _____
- ○ NO. AT EACH SHAFT BEARING _____ TOTAL NO. _____
- ○ OSCILATOR-DEMODULATORS SUPPLIED BY: _____
  - ○ MFR. _____ ☐ MODEL _____
- ○ MONITOR SUPPLIED BY _____ NO. CHANNEL _____
  - ○ LOCATION _____ ENCLOSURE _____
  - ○ MFR. _____ ☐ MODEL _____
  - ☐ SCALE RANGE _____ ALARM : ☐ SET @ ____ M
  - ○ SHUTDOWN : ☐ SET @ ____ M ○ TIME DELAY ____ sec.

### AXIAL MOVEMENT DETECTORS

- ○ TYPE _____ ☐ MODEL _____
- ○ MFR. _____ NO. REQUIRED _____
- ○ OSCILATOR-DEMODULATORS SUPPLIED BY: _____
  - ○ MFR. _____ ☐ MODEL _____
- ○ MONITOR SUPPLIED BY _____ NO. CHANNEL _____
  - ○ LOCATION _____ ENCLOSURE _____
  - ○ MFR. _____ ☐ MODEL _____
  - ☐ SCALE RANGE _____ ○ ALARM : ☐ SET @ ____ M
  - ○ SHUTDOWN : ☐ SET @ ____ M ○ TIME DELAY ____ sec.

### KEYPHASER SENSOR

- ○ TYPE _____ ☐ MODEL _____
- ○ MFR. _____ NO. REQUIRED _____
- ○ LOCATION _____ ENCLOSURE _____
- ○ OSCILATOR-DEMODULATOR SUPPLIED BY
  - ○ MFR. _____ ☐ MODEL _____
- ○ MONITOR SUPPLIED BY _____ NO. CHANNEL _____
  - ○ LOCATION _____ ENCLOSURE _____
  - ○ MFR. _____ ☐ MODEL _____

### BEARING TEMPERATURE DEVICES

- ○ THERMISTORS :
  - ○ TYPE: ____ Positive Temp. Coef. ____ Neg. Temp. Coef.
  - ○ Temp. Switch & Indicator By : ____ Purchaser ____ Mfr.
- ○ THERMOCOUPLES :
  - ○ Selector Switch & Indicator By: ____ Purchaser ____ Mfr.
- ○ RESISTANCE TEMP. DETECTORS :
  - ○ Resistance Material : _____ ☐ _____ OHM
  - ○ Selector Switch & Indicator By : ____ Purchaser ____ Mfr.
- ○ LOCATION OF JOURNAL BEARING :
  - No. _____ Ea. Pad _____ Every Other Pad ____ Per Bearing
  - _____ Other _____
- ○ LOCATION OF THRUST BEARING :
  - No.(Active) : ____ Ea. Pad ____ Every Other Pad ____ Per Bearing
  - _____ Other _____
  - No.(Inactive): ____ Ea. Pad ____ Every Other Pad ____ Per Bearing
  - _____ Other _____
- ☐ MAXIMUM BEARING TEMPERATURE :
  - _____ $^{O}$C FOR ALARM _____ $^{O}$C FOR SHUTDOWN

REMARK : _____

**SPECIAL PURPOSE STEAM TURBINE**
**SPECIFICATION SHEET (CONTINUED)**

JOB NO. : _____ ITEM NO. : _____
DOC. NO. : _____ ( 5 / 6 )
MADE BY : _____ REV. : _____ DATE : _____

## INSTRUMENTATION

EXHAUST RELIEF VALVE REQUIREMENTS
○ MAX SET PRESSURE _____ kg/cm² G EXHAUST
○ STEAM ROW _____ kg/hr
○ SUPPLIED BY _____ PURCHASER _____ VENDOR

EXTRACTION RELIEF VALVE REQUIREMENTS
○ MAX SET PRESSURE _____ kg/cm² G EXTRAXTION
○ STEAM ROW _____ kg/hr
○ SUPPLIED BY _____ PURCHASER _____ VENDOR

AREA CLASSIFICATION
CLASS _____ GROUP _____ DIVISION _____

MOTOR CONTROL & INSTRUMENT VOLTAGE
_____ VOLTS _____ PHASE _____ Hz

ALARM & SHUTDOWN VOLTAGE
_____ VOLTS _____ PHASE _____ Hz
SOLENOID VOLTAGE _____ VOLTS

LOCAL CONTROL PANEL
FURNISHED BY ☐ VENDOR ☐ PURCHASER ☐ OTHER _____
☐ FREE STANDING ☐ WEATHER PROOF ☐ TOTALLY ENCLOSED ☐ EXTRA CUTOUTS
☐ VIBRATION ASCILATOR ☐ STRIP HEATER ☐ PURGE CONNECTION ☐ WITH DOORS
☐ ANNUNCIATOR FURNISHED BY ☐ VENDOR ☐ PURCHASER ☐ OTHERS
ANNUNCIATOR LOCATED ON : ☐ LOCAL PANEL ☐ CONTROL ROOM ☐ MAIN CONTROL BOARD
☐ CUSTOMER CONNECTIONS BROUGHT OUT TO TERMINAL BOXES BY VENDOR
REMARKS : _____

INSTRUMENT SUPPLIERS : ☐ FOLLOWING LIST ☐ REFER TO "DATASHEET FOR INSTRUMENT DOC./DWG. NO. _____

| | | | | |
|---|---|---|---|---|
| Pressure Gages | MFR. : | | SIZE & TYPE : | |
| Temperature Gages | MFR. : | | SIZE & TYPE : | |
| Level Gages | MFR. : | | SIZE & TYPE : | |
| Diff. Pressure Switches | MFR. : | | SIZE & TYPE : | |
| Temperature Switches | MFR. : | | SIZE & TYPE : | |
| Level Switches | MFR. : | | SIZE & TYPE : | |
| Control Valves | MFR. : | | SIZE & TYPE : | |
| Pressure Relief Valves | MFR. : | | SIZE & TYPE : | |
| Thermal Relief Valves | MFR. : | | SIZE & TYPE : | |
| Sight Flow Indicators | MFR. : | | SIZE & TYPE : | |
| Pneu. Pressure Transmitters | MFR. : | | SIZE & TYPE : | |
| Vibration Equipment | MFR. : | | SIZE & TYPE : | |
| Tachometer | MFR. : | | SIZE & TYPE : | |
| Solenoid Valves | MFR. : | | SIZE & TYPE : | |
| Annunciator | MFR. : | | SIZE & TYPE : | |
| Thermocouples | MFR. : | | SIZE & TYPE : | |
| Resistance Temp. Detectors | MFR. : | | SIZE & TYPE : | |
| Thermowells | MFR. : | | SIZE & TYPE : | |
| _____ | MFR. : | | SIZE & TYPE : | |
| _____ | MFR. : | | SIZE & TYPE : | |
| _____ | MFR. : | | SIZE & TYPE : | |
| _____ | MFR. : | | SIZE & TYPE : | |
| _____ | MFR. : | | SIZE & TYPE : | |

SWITCHES
ENCLOSURES ○ EXPLOSION PROOF ○ WEATHER PROOF ○ OTHER _____
ALARM CONTACTS SHALL ☐ OPEN ☐ CLOSE TO SOUND ALARM - AND BE NORMALLY ☐ ENERGIZED ☐ DE-ENERGIZED
SHUTDOWN CONTACT SHALL ☐ OPEN ☐ CLOSE TO TRIP - END BE NORMALLY ☐ ENERGIZED ☐ DE-ENERGIZED
NOTE : NORMAL CONDITION IS : WHEN TURBINE IS IN OPERATION

MISCELLANEOUS
PRE-ALARM AND SHUTDOWN SWITCHES SHALL BE SEPARATE
PURCHASERS ELECTRICAL AND INSTRUMENT CONNECTIONS WITHIN THE CONFINES OF THE BASEPLATE AND CONSOLE SHALL BE :
☐ BROUGHT OUT TO TERMINAL BOXES ☐ MADE DIRECTLY BY PURCHASER
PURCHASER'S COMMENTS : _____

( )

JOB NO. : _____ ITEM NO. : _____

DOC. NO. : _____ ( 6 / 6 )

MADE BY : _____ REV. : _____ DATE : _____

**SPECIAL PURPOSE STEAM TURBINE**
**SPECIFICATION SHEET (CONTINUED)**

GEAR

- ○ SEPARATE DATASHEET ATTACHED
- ○ SPECIAL PURPOSE GEAR REQUIRED
- ○ GEAR FURNISHED BY : _____

OIL SYSTEM

FURNISHED BY : ○ TURBINE MFR. ○ OTHERS

- ○ SEPARATE FOR TURBINE ONLY
- ○ COMMON WITH DRIVEN EQUIPMENT

TURBINE MFR. TO SUPPLY

- ○ STAINLESS STEEL OIL SUPPLY HEADER PIPING
- ○ OIL DRAIN HEADER PIPING ○ ST. STEEL ○ C.S.

EMERGENCY TURNING-GEAR

- ○ TURNING GEAR REQ'D ○ QUICK START REQUIRED
- ☐ MFR. _____ ☐ MODEL _____
- ☐ RATIO _____
- ☐ MOTOR ___ Electric ___ kW ___ VOLTS ○ AC ○ DC
  ___ Pneumatic ___ $kg/cm^2$ G ___ $^{O}C$ ___ $Nm^3/hr$
  ___ Auto Engage ___ Manual Engage

PAINTING

- ○ MANUFACTURER'S STANDARD
- ○ OTHER _____

SHIPMENT

- ○ DOMESTIC ○ EXPORT
- ○ EXPORT BOXING REQ'D ○ OUTDOOR STORAGE OVER 6 (SIX) MONTHS
- ○ WATER PROOF BOXING REQ'D
- ○ SPARE ROTOR ASSEMBLY PACKAGED FOR
  - ○ HORIZONTAL STORAGE ○ VERTICAL STORAGE

WEIGHT

- ☐ TURBINE _____ kg
- ☐ ROTOR _____ kg
- ☐ TURBINE UPPER 1/2 CASING _____ kg
- ☐ MAX. FOR MAINTENANCE (IDENTIFY) _____ kg
  ( _____ )
- ☐ TOTAL SHIPPING WEIGHT _____ kg

SPACE REQUIREMENTS

- ☐ COMPLETE UNIT : L (m) _____ W (m) _____ H (m) _____
- ☐ CONTROL PANEL : L (m) _____ W (m) _____ H (m) _____

MISCELLANEOUS

- ○ PROVISIONS FOR FIELD BALANCING
- ○ VENDOR'S REVIEW AND COMMENT ON PURCHASER'S PIPING AND FOUNDATION DRAWINGS REQUIRED
- ○ SHAFT GROUNDING DEVICES
- ○ "Y" TYPE STRAINER FOR
- ○ WATER WASHING CONNECTIONS
- ○ OPTICAL ALIGNMENT FLATS
- ○ INSULATION (LAGGING) REQUIRED
- ○ JACKET REQUIRED
- ○ AXIAL ALIGNMENT KEY
- ○ BLADE DIAGRAMS ___ CAMPBELL ___ GOODMAN ___ SODERBERG ___ OTHER _____
- ○ METRIC / ENGLISH / SI
  ___ DRAWINGS _____ EXTERNAL FLANGES
  ___ INTERNAL BOLTING AND THREADS

SKETCH :

REMARKS : _____