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#### ST39003 उत्पाद मानक भी एम है एम का SIGN & DATE पुष्ठ 13 दनाक एव STEAM TURBINE ENGINEERING PRODUCT STANDARD Page 2 of 13 SLEEKSLE INVENTORY PUMP SPECIFICATION:-5.0 5.1 IDENTIFICATION NO. TO BE MENTIONED ON NAME PLATE AS FOLLOWS:-: MAV 31 AP 001 AND MAV 32 AP 001 Ē 125-19 SCREW TYPE POSITIVE DISPLACEMENT 5.2 TYPE सम्भग्ने सूचा DESIGN TEMPERATURE = 100°C, OPERATING TEMPERATURE = 65°C NORMAL DISCHARGE PRESSURE NORMAL DISCHARGE PRESSURE **NORMAL** NORMAL DISCHARGE DISCHARGE CAPACITY VARIANT VARIANT COPYRIGHT AND CONFIDENTIAL. The microstropers of Bluars Heavy Electroal familia tool be used directly or undirectly in any way definimental to the intensit of the company. CAPACITY NUMBER NUMBER ( Litre/Sec ) ( Bor.) ( Litre/Sec ) (Bar) VAR. 1 1.26 120 VAR. 10 1.80 VAR. 2 140 VAR. 11 VAR. 3 1.68 189 VAR. 12 VAR. 13 VAR. 4 1.25 182 182 VAR. 14 VAR. 5 2.25 VAR 6 178 VAR. 15 1.53 VAR. 7 1.33 182 VAR. 16 VAR. B 1.27 182 VAR. 17 VAR. 9 1.84 178 VAR. 18 PUMP SHALL BE SUITABLE FOR MOUNTING VERTICALLY ON THE OIL TANK. BASE PLATE OF PUMP SHALL MATCH THE COUNTER FLANGE PROVIDED ON THE TANK AS PER SKETCH ON PAGE 13. SMOOTH FUNCTIONING IS ENSURED BY MAINTAINING OIL LEVELS AS DEPICTED IN THE ARRANGEMENT ON PAGE 12. ज्ञासम्बद्ध DURING INITIAL START UP IN WINTER, OIL TEMPERATURE MAY GO AS BELOW AS 20°C. 5.3 जो कि छपनी क हितमें झानकारक हो नाकधा 6.0 सुबना माश्य ह्न्या इज्रीक्ट्रकल्प की सम्पाल है इसका A SUITABLE MOTOR CONFORMING TO THE PUMP REQUIREMENTS SHALL BE SUPPLIED. FOR DETAILS ON MOTOR, PLEASE REFER ANNEXURE-I. DESIGN AND CONSTRUCTION OF PUMP:-7.0 ALL MATERIALS USED IN THE CONSTRUCTION OF THE PUMPS SHALL BE SELECTED Ę, FROM THE RANGE OF MATERIAL MOST APPROPRIATELY SUITABLE FOR THE PURPOSE AND SERVICE CONDITIONS. THE BIDDER SHALL FURNISH ALONGWITH THE OFFER, MATERIAL SPECIFICATION FOR ALL THE COMPONENTS TO BHEL FOR THEIR REVIEW HE JUL AND ACCEPTANCE BY BHEL/OWNER. BHEL/OWNER RESERVES THE RIGHT TO ASK FOR CHANGES IN MATERIAL, THE SIZE SHALL BE STANDARDISED SO AS TO ENSURE INTERCHANGEABILITY. इस प्रजास में के नह 7.1 SPECIAL TOOLS AND TACKLES अप्रत्यक्ष रूप से। ONE SET OF TOOLS REQUIRED FOR ERECTION, OPERATION AND MANTENANCE OF THE PUMPING SETS SHALL BE SUPPLIED TOGETHER WITH EACH PUMP. LIST OF THESE TOOLS SHALL BE SUBMITTED ALONGWITH THE OFFER. SECN & DATE 2 इन्स्तीहरू एन Q. 17/06/06 DHARAMPAL निर्माणकर्ता REV. NO. INVENTORY सामधी सूनी सन्धा WORKED BY 08 $\mathbf{L}$ जांचकर्ता ANUJ JAIN 15/106

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		(SIEMA TORBI	VE ENGINEERIN	G) Page	9 J 	Of	13
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	7.2	THE MATERIALS OF CONSTRUCT	CTION OF THE PUMPS	SHALL BE SUC	H AS TO	) resis	ST
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एवं गोपनीय दिस्कल्म की सम्पत्ति है इसका प्रथक्ष कपनी के दित में झनिकाथक हो न किया	SERV	UMP BEARINGS SHALL BE DE VICE FOR FRICTION BEARINGS	SIGNED SO AS TO ASS & 30,000 hrs FOR RAI	URE 50,000 hr	S CONT	(NUDUS	
र एवं गोपनीय इलेस्ट्रिक्क की समस्ति है कि कंपनी के हितने हानिका	7.8	THE MECHANICAL DESIGN S	HALL ALLOW FASY	ACCESS TO V	ARIUHS.	PADT	.6
र्गगोपनीय कल्साकी सम्पत्ति नीके दित्तमें शा		MAKITAG DOL MATATENANCE	WURK.				<b>J</b>
<u>≥</u> 🖫 🐔	7.9 BAS	THE DISCHARGE BRANCH OF E PLATE BY THE SUPPLIER,	THE PUMP SHALL BE	TAKEN DUT	ABOVE	THE	
स्यत्याधिका स्टिनामात्त्रहेता मीत्त्रह्णयोग् जो	•	PUMPS SHALL BE PROVIDED					
	/.11	ALL SYSTEM PARTS CARRYIN	IG OIL SHALL BE OF	OIL TICHT COL	ICES.	101:	
मंबीय से किसी		MESSION-TIPE FITTINGS A	RE NOT PERMISSIBLE	•			
हस प्रजेखाने वी गर्ड ज्ञास स्थासे किसी	7.12 THAT	FOR SCREW PUMPS RUNNING	AT SUBCRITICAL SPEEL	DS, IT SHALL BE	ENSUR	RED	
8 H G	1 011110	THE CRITICAL SPEED LIES ATION WITH A MINIMUM MARGINER CRITICAL SPEEDS IT ST	N ON 1597 OF DATED	COEED FAD DI			
		JPER CRITICAL SPEEDS, IT SH CIENT MAGNITUDE (NOT LESS BORDER IN CRITICAL SPEEDS					
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E *   b	Ur CO	UPLING BETWEEN THE PUMP A	NU MOTOR WHILE CALC	JLATIN THE CRIT	ICAL SPI	EEDS.	ļ
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Na S	<u>}</u> -	•	जांचकर्ता CHECKED BY	ANUJ JAIN	Mr.	15/6	66
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#### ST-39003 एवं हस्ताश मी (ग ई एम उत्पाद मानक SIGN & DATE पृष्ठ 13 4 वा PRODUCT STANDARD विताका ( STEAM TURBINE ENGINEERING) Page 4 Of 13 ALLOWANCES SHALL BE MADE FOR THE TYPE OF COUPLING BETWEEN THE PUMP AND MOTOR WHILE CALCULATING THE CRITICAL SPEEDS. 7.13 COUPLING समग्री सूची संख्या को अशिक मित करता है SUITABLE COUPLING WITH GUARDS SHALL BE PROVIDED FOR COUPLING PUMP WITH MOTOR, IT SHALL BE DESIGNED TO FACILITATE EASY ALIGNMENT. ONE SET OF COUPLING BOLTS SHALL BE SUPPLIED IN SPARE. 7.14 **FOUNDATION** THE PUMP SHALL BE MOUNTED ON THE OIL TANK AND HUNG FROM BED COPYRIGHT AND CONFIDENTIAL The information on this document is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company PLATE AT THE TANK TOP INTO THE TANK. FOR FURTHER DETAILS PLEASE REFER PAGE NO. 12 AND 13. ALL THE SEATING MACHINED SURFACES OF BED PLATE TO BE MAINTAINED FOR 0.5 mm FLATNESS. QUALITY ASSURANCE, INSPECTION AND TESTING 8.0 THE MANUFACTURER SHALL CONDUCT ALL TESTS REQUIRED TO ENSURE (a) ALL THE COMPONENTS PART OF THE JACKING OIL PUMP OFFERED, CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION AND IN COMPLIANCE WITH REQUIREMENTS OF APPLICABLE CODES AND STANDARDS. THE BIDDER SHALL SUBMIT ALONGWITH HIS OFFER QUALITY PLAN. (b) THE PARTICULARS OF THE PROPOSED SHOP TESTS AND PROCEDURES FOR THE TESTS SHALL BE SUBMITTED TO BHEL/ITS CUSTOMER FOR APPROVAL 8.1 ALONGWITH QUALITY PLAN. 8.2 THE MATERIAL SHALL BE DESPATCHED ONLY AFTER INSPECTION AND CLEARENCE OF MATERIAL BY BHEL OR ITS CUSTOMER AND APPROVAL OF TEST CERTIFICATE BY BHEL/ITS CUSTOMER. THE MINIMUM TESTS/CHECKS TO BE CARRIED OUT ON THE JACKING 8.3 इस एलेख में वी गई सूचना मारक हेरी इलेटिद्रकल्प की सप्परित है इसका परवन परवस करा से किसी भी तरह प्रयोग, जो कि कंपनी के डिस में हानिकारक हो न किया OIL PUMP AS ENVISAGED BY BHEL ARE GIVEN BELOW. THIS IS, HOWEVER, NOT INTENDED TO FORM A COMPREHENSIVE TESTING PROGRAMME AS IT IS SUPPLIERS RESPONSIBLITY TO PREPARE THE DETAILED QUALITY PLAN, WHICH SHOULD ALSO INCLUDE TESTS/CHECKS CARRIED OUT BY SUPPLIER AS A PART OF THEIR NORMAL PARACTICE . THIS QUALITY PLAN IS SUBJECT TO THE APPROVAL OF BHEL /ITS CUSTOMER AND BHEL/ITS CUSTOMER RESERVES THE RIGHT TO ASK FOR ANY MORE CHECKS AT स्वत्वाधिकार एवं THE TIME OF QUALITY PLAN FINALISATION. 8.3.1 TESTING OF MATERIALS THE MATERIAL OF EACH COMPONENT SHALL BE TESTED AS PER एत्यक्ष क्य है किसी भी तर्ह RELEVENT SPECIFICATION FOR ITS CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES, VIZ. YS, UTS, IMPACT, % ELONGATION % RA ETC. AND NDT, UT ON SHAFT, MPI ON SCREWS AND CASING ETC. TO ENSURE FREEDOM FROM SURFACE AND SUB-SURFACE DEFECTS SHALL BE CARRIED OUT. 8.3.2 FOLLOWING TESTS SHALL BE CARRIED OUT DURING VARIOUS STAGES OF MANUFACTURE AT MANUFACTURER WORKS. DATE CHECK FOR DIMENSIONS OF ALL COMPONENT PARTS INCLUDING fa miæ (a) SURFACE FINISH, AXIAL AND RADIAL RUN OUT OF SHAFT ETC. इस्ताभर एव SIGN & NON-DESTRUCTIVE EXAMINATION :- UT FOR SCREW BLANKS & DPT/MPI ON (b) SCREWS TO BE CARRIED OUT TO ENSURE SURFACE / SUB-SURFACE DEFECTS. O. REV. NO. निर्माणकर्ता DHARAMPAL सामग्री सूची संख्या INVENTORY NO. WORKED BY 15/6/06 08 S जांचकर्ता ANUJ JAIN 15/6/06 CHECKED BY hui

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-   -		. (STEAW FORDING ENGIN	· · · · · · · · · · · · · · · · · · ·	, 19	- 3	01	13
SUPERSEDES INVENTORY	(c)	CHECK THE CONDITION OF THE OIL SOIL THROUGH SEALS ETC.					
ਲ €	(d)	HYDRAULIC TESTING OF THE CASING AS PER VDMA 24284.	AND OTHER	PRESSURE PA	ARTS SHA	ALL BE	=
संख्या को करता है	(e)	CHECK FOR DIRECTION OF ROTATION OF	PUMP.				
सामग्री सूम्री संख्या व अधिकमित करता है	(f)	PERFORMANCE TEST WITH CALIBRATED PUMP CHARACTERISTICS, VIZ. DISCHARGE POWER CONSUMPTION, NOISE AND VIBRATED	AT THE GIV	EN PRESSURE	SCHEDU		
y way	(g)	STRIP DOWN TEST TO CHECK THE CO CLEARANCES AND AXIAL PLAY OF SHAFT		BEARING, ME	CHANICAL	-	
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharsat Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company	8.3.3	AFTER TESTING THE PUMP, ALL THE THOROUGHLY CLEANED, DRIED AND CONS BRIGHT PARTS EXPOSED TO WEATHER SHA AND THEN TWO COATS OF APPROVED P COMPONENTS OF PUMP AS ONE UNIT A PACKAGE. THE PACKAGES SHOULD BE S AGAINST ANY DAMAGE DURING TRANSIT AND DAMP ATMOSPHERE.	ERVED. ALL ALL BE GIVEN AINTS. ENSU ND PACK IN UFFICIENTLY	METALLIC SURI N A SUITABLE JRE ASSEMBLY WATER AND STRONG TO S	FACES EXPRIMING OF ALL DUST PRAFEGAUR	COAT COAT THE COOF	
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The	9.1	ASSEMBLY DRAWING WITH PART LISTS	NOZZLE SI				S,
ग प्रस्पक्ष एवं न किया जाए ।	9.2	BASE PLATE DETAILS AND CROSS SECTION AF CALCULATIONS WITH NECESSARY DRAY Etc), POWER REQUIREMENTS, TORQUE SETT TORQUE VALUE FOR KEY AND POWER SE	WINGS (TORGING VALUE FO	OUE/SPEED CH	IARACTER	RISTICS	
गोपनीय ल्म की मम्पल्ति है इसक के हित में हानिकारक हो	9.3	MAXIMUM MAGNETIC AND NON-MAGNITHROUGH PUMP SCREW CLEARANCE WITH SPECIFIED IN THE OFFER.	ETIC PARTICL				
स्वत्वाधिकार एवं गोपनीय मूचन भएत हेवी इलेट्रिक्क्स की सम्पत्ति है इसका प्रत्यक्ष एवं तस्द प्रयोग् जो कि कम्मी के हिंद में हमिकारक हो न किया ज	9.4	QUALITY PLAN WITH DETAILS OF QUALITY THIS SHOULD GENERALLY CONFIRM TO VDMA PRACTICES, IN PARTICULAR VDMA CODES BE APPLIED AND TAKEN INTO ACCOUNT FOR STANDARDS APPLIED IN EACH CASE SHA	24284. GENE AND STANDA DESIGN OF S	ERALLY ACCEPTE IRDS OR EQUIV SCREW PUMPS.	ED ENGINI VALENT S THE COD	EERING SHALL	
इस प्रलेख में दी गई मू अप्रत्यक्ष रूप से किसी भी त	9.5	FOR DOCUMENTATION ON MOTOR, PLEATHE PRE-APPROVED DOCUMENTS BY BHEL AND HIS SUBCONTRACTORS OF THEIR RETHE PRE-APPROVED DOCUMENTS SIND CHANGES SHALL BE MADE WITHOUT AP	SE REFER A SHALL NOT SPONSIBILITI HALL FORM	nnexure—I. E) Relieve the I Ies. The Basis Fo	KAMINATIO MANUFAC	TURER	
Ration DATE O7	10.0	DOCUMENTS TO BE SUPPLIED AFTER 1 THESE SHALL BE SUPPLIED EITHER AND A SET OF REPRODUCIBLE. SCHEDULE	IN FIVE CO	PIES EACH O	R TWO C	OPIES	;
* *	10.1	CONTRACTUAL DRAWINGS	. DOOME!		B WEEKS		
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s s			( STEAM TURBINE ENGINEERI	NG)	Page	6	of	13
SUPERSEDES INVENTORY		10.4	TEST CERTIFICATE OF ALL TESTS AS PER QUALITY PLAN, DRAWINGS DURING VARIOUS STAGE OF MANUFACTURE. ALSO REFER CLAUSE 8.2 AND 8.3.4 ABOVE.	 S	BEFO	RE DE	SPATC	H
संख्या को करता है		10.5	LIST OF TOOLS AND TACKLES	_	8 WE	FKS		
सामग्री सूबी संख्या अधिकमित करता	<u>.</u>	10.6	THE STATIC AND DYNAMIC LOADING DETAILS ON SUPPORT/FOUNDATION SHOULD BE FURNISHED	– D. –	8 WE	EKS		
avy way		10.7 10.8	FOR DOCUMENTATION ON MOTOR, PLEASE R O & M MANUALS (10 HARD COPIES+2CD)	EFER ANN	EXURE 1.			
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CC The info Electrical		11.9	FLOW MEDIUM.					
-	-	11.10	SPEED.					
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स्वत्वाधिकार एवं गोपनीय इस प्रलेख में ती गई मूचना माता होती इत्लेक्ट्रिक्स की सम्मोत है इसका प्रत्यक्ष एव अप्रत्यस स्था से किसी मी सरह प्राणी गा कि कर्मा से हिम्मी सारह प्रणी गा कि कर्मी से हिम्मी सार			THE SURFACE SHALL BE CLEANED & PRECOATINGS BY BLASTING WITH NON-SILICATIC AS COATING SHOULD BE OIL RESISTANT TO PREVENTO PREVENT THE DETERIORATION OF THE SHALL GIVE EXACT AND PRECISE DETAILS ABOUM FOR SURFACE PROTECTION, WHICH SHALL BE CHINSTRUCTIONS SHOULD BE ISSUED REGARDING ALONGWITH SPECIFICATION OF MATERIAL TO BE QUANTITY OF MATERIAL REQUIRED FOR RECONSESITE DURING STORAGE SHALL BE SUPPLIED AS INSTRUCTION TO BE FOLLOWED DURING STORAGE	BBRASIVE A NT COTAMIN COATING I UT THE ME ECKD AND A RECONSERI USED FOR ERVATION AI ALONGWITH	GENTS. TATION OF TSELF. ASURES PPROVED VATION, EABOVE FOR DECO	THE PRESENTED THE SERVISE BY BHE DECONSPURPOSERVE ANY SERVER POR SERVER PROSERVE ANY SERVER PROSERVER PROS	ROTECT SPECIF JUPPL AGED EL. ERVATI SE. 10 ATION SPECIF	IVE IED IER BY ON O% AT
हस्ताक्षर एवं दिनांक IGN & DATE			ETC. SHALL ALSO BE INTIMATED. ALL SUCH AVAILABLE TO SITE INCHARGE IN A SEPARATE PUMP PACKAGE ).	INSTRUCTI	ONS SH	ALL B	E MAI	DE
SIGN	3		THE SUPPLIER SHALL BE RESPONSIBLE FO TRANSPORTATION, HANDLING AND STORAGE D					NG
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#### ST- 39003 उत्पाद मानक 5 4-11-47 बी एन ई एम SIGN & DATE 7 पृष्ठ 13 का किमांक एवं PRODUCT STANDARD (STEAM TURBINE ENGINEERING) Page 7 Of 13 13.0 **GENERAL** THE SUPPLIER CAN MAKE SUITABLE OFFERS EVEN IF THERE ARE MINOR DEVIATIONS WHICH DO NOT AFFECT THE EFFICIENT FUNCTIONING OF THE EQUIPMENT. HOWEVER, THE DEVIATIONS MUST BE CLEARLY SPELT OUT, SUPPLIER SHALL ALSO FILL IN THE BLANK DATA SHEET AS PER ANNEXURE—II AND SUBMIT THE SAME मूमी संख्याको ALONGWITH THE OFFER. THE OFFER MAY NOT BE CONSIDERED IF ALL THE TECHNICAL PARTICULARS AND INFORMATIONS CALLED FOR IN THE SPECIFICATION ARE NOT SUBMITTED ALONGWITH THE OFFER. समयो 14.0 **GUARANTEE** THE SUPPLIER SHALL GUARANTEE TROUBLE FREE AND SATISFACTORY OPERATION 14.1 OF THE EQUIPMENT FOR A PERIOD OF 12 MONTHS AFTER THE INSTALLATION AND COMMISSIONING OR FOR A PERIOD OF 18 MONTHS FROM THE DAY THE EQUIPMENT COPYRIGHT AND CONFIDENTIAL information on this documents is the property of Blanta Heavy iteal Limited. It must not be used directly or indirectly in anywaterinestal to the inderest of the company derimental to the inderest of the company. LEAVES THE SUPPLIER'S WORKS WHICHEVER IS EARLIER. THE SUPPLIER SHALL GUARANTEE THE CAPACITY, HEAD AND EFFICIENCY OF 14.2 THE PUMP AS PER THE TESTED CHARACTERISTIC WITH OIL. IF DURING ERECTION AT SITE ANY DEFICIENCY IN A PART IS DETECTED. BHEL 14.3 SITE REPRESENTATIVE SHALL PREPARE THE ASSESSMENT REPORT AND A COPY OF THE SAME SHALL BE FORWARDED TO THE SUPPLIER. THE SUPPLIER SHALL REPLACE/ RECTIFY THE CONCERNED ITEMS FREE OF CHARGE. THE SUPPLIER IF HE SO DESIRE MAY DEPUTE HIS REPRESENTATIVE TO SITE OTHERWISE THE FINDING OF BHEL REPRESENTATIVE SHALL BE FINAL AND BINDING ON THE SUPPLIER OF PUMPING SET. THE SUPPLIER SHALL REPAIR/REPLACE THE DEFECTIVE PARTS AT HIS OWN 14.4 COST DURING THE GUARANTEE PERIOD. 15.0 **SPARES** THE SUPPLIER SHALL QUOTE ITEMWISE PRICE OF RECOMMENDED SPARES FOR 3 YEARS AND 5 YEARS OPERATION RESPECTIVELY. The f ANNEXURE - I एलेखा में हो गई सूचना मारत हैयी इलेक्ट्रिकरम की सम्पत्ति है इसका प्रत्या एवं SPECIFICATION OF A.C. MOTOR FOR JACKING OIL PUMP निक्रम A SUITABLE MOTOR CONFORMING TO THE JACKING OIL PUMP REQUIREMENT षयोग. जो कि कंपनी के हित में हानिकारक हो। SHALL BE SUPPLIED. THE MOTOR SHALL CONFORM TO IS:325, IS:2253, IS:2254, IS:3202, IS:4029 AND IS:4722 OR EQUIVALENT BS SPECIFICATION. THE MOTOR SHALL MATCH THE REQUIREMENTS OF DRIVEN EQUIPMENT IN ALL RESPECTS. THE गोपनी MOTOR SHALL ALSO MEET THE FOLLOWING REQUIREMENTS BROADLY. THE MOTOR SHALL MEET ALL INDIAN STATUTORY REQUIREMENTS. D D **APPLICATION** स्वत्वाधिकार TO DRIVE JACKING OIL PUMP FOR SUPPLYING HIGH PRESSURE OIL TO TURBINE BEARINGS. प्रत्यक्ष क्ष्म से किसी मी ठरह 3.0 TYPE OF MOTOR: SQUIRREL CAGE, INDUCTION MOTOR. 3.1 KW RATING IT SHALL HAVE AT LEAST 15% RESERVE CAPACITY OVER AND ABOVE REQUIRED POWER TO DRIVE THE PUMP WHEN IT IS DISCHARGING MAX. QUANTITY. E. KW ACTUALLY REQUIRED BY DRIVEN EQUIPMENT 3.2 : PUMP CAPACITY UNDER SPECIFIED OPERATION/START UP 3.3 RATED VOLTAGE 415V DATE 4 FREQUENCY 50HZ हस्ताकार एव જ 3.4 PERMISSIBLE VOLTAGE & FREQUENCY ±10% VOLT Ç SIGN VARIATION UNDER NORMAL RUNNING ±5% FREQUENCY CONDITIONS COMBINED VARIATION. 10% (SUM OF ABSOLUTE VALUES) REV. NO. निर्माणकर्ता DHARAMPAL INVENTORY NO. WORKED BY 19 15/2/06 सूची संख्या 08 सामग्री । जांचकर्ता ANUJ JAIN 15/6/66 CHECKED BY

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	3.5	CON	iditions to	E REQUIRED BRING DRIV	UNDER /EN EQU	STARTIN JIPMENT	G T	,	:	80%	RATED	· · · · · · · · · · · · · · · · · · ·		
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त्रीष्ट्रं गोप १३ताष्ट्रं आ जा १५७२मा छ शिव		R SHALL BE PAINTED WITH ITS COLOUR SHALL BE IN			VORKING (	CONDI	ITION		
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F∰.			( STEAM TURBINE ENGINEER	UNG)	Page	10 (	Of 1;
			ADDITIONAL TYPE TESTS:		<del>,</del>	•	
<b>E</b>		(a)	DEGREE OF PROTECTION TEST TO CON OF PROTECTION. IN CASE THE TEST IS A FRAME SIZE OF MACHINE, THEN TEST RE	ALREADY	CARRIED	ON TH	E SAME
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TIAL Sharat Heavy Ctly in any way y		7.0	BE LIMITED SO AS TO ACHIEVE PUMP—MO IN CLAUSE 7.4 ON PAGE—3. DOCUMENTS TO BE SUPPLIED WITH OFF	DTOR SET	NOISE L	EVEL A	AS GIVEN
ID CONFIDENTIAL must is the property of Bharat Heavy used directly or indirectly in any way netered of the company			THE OFFER SHOULD BE ACCOMPANIED IN TWO COPIES. THE OFFER WILL NOT DOCUMENTS ARE NOT SUPPLIED.	D WITH F	OLLOWIN SIDERED	G DOC	UMENTS THESE
A Gum		7.1 7.1.1	CHARACTERISTICS AT 80%, 100% AND STARTING CURRENT V/S TIME.	110% V	OLTAGES:		
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CO refined tricked 1		7.3	STARTING TIME.				
TElec		7.3.1	WITH 100% VOLTAGE AT TERMINAL.				
भ एवं याजाए		7.3.2 7.3.3	WITH 85 % VOLTAGE AT TERMINAL. WITH 80 % VOLTAGE AT TERMINAL.				
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िय गिरू हे इ	•	7.5 7.6	POWER (KW) RATING CALCULATION w.r.t. PI	UMP REQ	UIREMENT	•	
र्षेत्रं गोपनीय प्रकल्म की सम्पत्ति हंइसका पत्यन एवं हेब्दी के डिस्टेंडानिकारक हो निकया जाए		7.0	EXPECTED LIFE OF BEARING.  DATA IN RESPECT OF ALL ITEMS MENTIONED AT	DADA 4.0	70 50 6		
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टीकार बड़ेनी इले !ग. जो कि		0.0	DOCUMENTS TO BE FURNISHED WITHIN FOUR WE (FOR BHEL OR THEIR CUSTOMER'S APPROVAL):-	EKS OF PI	ACEMENT	OF ORD	ER_
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रू लेख में दी नई सू क्ष्य से किसी भी		8.2	DRAWING SHOWING TERMINAL DETAIL OF ALL	. TERMINA	LS AND I	-OCATIO	N
स्ट क्षेत्र अध्यक्ष		0.7	AND DIMENSION OF TERMINAL BOXES.				
#1070 G		8.3 8.4	ROTOR WEIGHT AND TOTAL MOTOR WEIGHT. CHARACTERISTIC CURVES OF THE MOTOR.	•			
		9.0	SIX COPIES OF TESTS CARRIED OUT AS PER	S CLAUSE	NO SO	ON C.	.СП
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#### ST-39003 **इत्पाद** मानक SIGN & DATE बीएच ई एम पृद्ध 13 का 11 PRODUCT STANDARD ( STEAM TURBINE ENGINEERING) Page 11 of 13 SUPERSEDES INVENTORY ANNEXURE-II DATA TO BE FURNISHED BY BIDDER ALONGWITH OFFER FOR JACKING OIL PUMP संख्या को 1.0 **EQUIPMENT AND SERVICES OFFERED** गमग्री सूची र अधिकमित व PLEASE STATE WHETHER THE FOLLOWING EQUIPMENT SERVICE AS SPECIFIED IN THE सामग्री DATA SHEETS ARE OFFERED OR NOT. 1.1 PUMP AS PER SPECIFICATION YES/NO MOTOR/MAKE 1.2 YES/NO mation on this documents is the property of Bharat Heavy Limited. I must not be used directly or indirectly in any way detrimental to the interest of the company 1.3 NECESSARY INSTRUMENTS, TEST CONNECTIONS. YES/NO 1.4 BASE PLATE AS PER DRAWING. YES/NO COPYRIGHT AND CONFIDENTIAL 1.5 COMPANION FLANGES YES/NO 1.6 SPARE PARTS YES/NO MAINTENANCE AND SPECIAL ERECTION TOOLS. 1.7 YES/NO 1.8 COMMISSIONING OF THE SET. YES/NO 1.9 NO. OF PUMPS OFFERED. 2.0 DESIGN AND PERFORMANCE. 2.1 DESIGNED CAPACITY OF EACH PUMP. M<sup>3</sup>/hour 2.2 NORMAL DISCHARGE PRESSURE **EFFICIENCY** e informans... ctrical Limited.It n detrins 2.3 2.4 RATED SPEED PERFORMANCE GUARANTEED WHEN INSTALLED 2.5 YES/NO AS PER GIVEN ARRANGEMENT. 2.6 PUMP b.h.p./Kw AT RATED CAPACITY MAXIMUM ALLOWABLE SUCTION LIFT 2.7 (FOR MINIMUM NPSH REQUIRED) में दी गई सूचना मारत हेवी इलेक्ट्रिकल्स की सम्पत्ति हे इसका प्रत्यक्ष एवं किसी मी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए MAXIMUM DISCHARGE PRESSURE FOR WHICH PUMP IS SUITABLE. PARTY SHALL INFORM THE FILTERATION LEVEL OF THE FLOW 2.8 2.9 MEDIA FOR PROPER FUNCTIONING OF PUMP. 3.0 MATERIAL OF CONSTRUCTION स्वत्वाधिकार एवं गोपनीय 3.1 **CASING** 3.2 DRIVING AND DRIVEN SPINDLE SCREW 3.3 BASE PLATE 3.4 WEARING RINGS 3.5 TYPE OF BEARINGS USED 3.6 TYPE OF COUPLING 3.7 **PACKING** प्रलेख में दी गई 4.0 CONNECTIONS 4.1 SUCTION SIZE 4.2 DISCHARGE SIZE 5.0 **DRAWINGS** 5.1 GENERAL ARRANGEMENT AND SECTIONAL DRAWING YES/NO ENCLOSED WITH OFFER. DATE 6.0 WEIGHT SCHEDULE 0 6.1 WEIGHT OF PUMP हरत्ताक्षर एवं SIGN & WEIGHT OF MOTOR 6.2 WEIGHT OF PUMP WITH MOTOR AND BASE FRAME. 6.3 7.0 CHARACTERISTIC CURVES REV. NO. निर्माणकर्ता DHARAMPAL सामग्री सूची संख्या INVENTORY WORKED BY 09 25 जांचकर्ता ġ ANUJ JAIN CHECKED BY 26-06-07 ٤V

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COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Barrat Heavy Electrical Lintecht in mast not be used directly or indirectly in any way detrimental to the interest of the company	OIL 7	CKING OIL PUMPOP) WITH MOTOR	RRAN	GEMI	DISCHARGE LA	MOTOR	. 6	ASE PLAT	E 7
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#### ST-39003 विशोक एवं हस्ताकार उत्पाद मानक भी एन ई एन SIGN & DATE पृष्ठ 13 वा PRODUCT STANDARD (STEAM TURBINE ENGINEERING) Page 13 Of BED PLATE EXISTING ON OIL TANK HOLES #18 समग्री सूची संख्याको X ±0.3 The information on this documents is the property of Bharal Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the intorest of the company COPYRIGHT AND CONFIDENTIAL B±0,3 G±0.3 F±0.3 E±0,3 C±0.3 C±0.3 Q±0.3 इस एलेस में थी गई सूचना मारत हैयाँ इलेक्ट्रिक्टन की सम्पत्ति है इसका प्रयक्ष ग्रंप परवास का से किसी मी तरह एयोग, जो कि कंपनी के हिस में साधिकाषक हो न किया जाए E ±0.3 F±0.3 G±0.3 H±0.3 स्वत्वाधिकार एवं गोपनीय J ±0.3 A±0.3 BED PLATE A±0.3 B±0.3 C ±0.3 D ±0.3 E±0.3 F ±0.3 G±0.3 H ±0.3 J±0.3 X±0.3 Y±0.3 700 AA 700 50 250 450 650 80 80 BB 700 700 35 245 455 665 \_ 60 CC 1320 900 30 240 450 660 870 1080 1290 85 9 DATE इस्साकार एवं दिनाक SIGN & G CROSS REFERRED STANDARDS: IS:325 , IS:2253 , IS:2254 , IS:3202 , IS:4027 , IS:4722 , IS:12065 , IS:12075 , VDMA:24284.

निर्माणकर्ता

जाचकर्ता

WORKED BY

CHECKED BY

**DHARAMPAL** 

ANUJ JAIN

REV. NO.

08

INVENTORY NO.

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#### उत्पाद मानक

# STEAM TURBINE ENGINEERING PRODUCT STANDARD

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#### 5.0 PUMP SPECIFICATION:-

IDENTIFICATION NO. TO BE MENTIONED ON NAME PLATE AS FOLLOWS:-: MAV 31 AP 001 AND MAV 32 AP 001

#### 5.2 TYPE

### SCREW TYPE POSITIVE DISPLACEMENT

DESIGN TEMPERATURE = 100°C, OPERATING TEMPERATURE = 65°C

VARIANT NUMBER	NORMAL DISCHARGE CAPACITY ( Litre/Sec )	NORMAL DISCHARGE PRESSURE ( Bar )
VAR. 1	1.26	120
VAR. 2	1.80	140
VAR. 3	1.68	189
VAR. 4	1.25	182
VAR. 5	2.25	182
VAR. 6	1.53	178
VAR. 7	1.33	182
VAR. 8	1.27	182
VAR. 9	1.84	178

VARIANT NUMBER	NORMAL DISCHARGE CAPACITY ( Litre/Sec )	NORMAL DISCHARGE PRESSURE ( Bar )
VAR. 10		
VAR. 11		
VAR. 12		
VAR. 13		
VAR. 14		
VAR. 15		
VAR. 16		
VAR. 17		
VAR. 18		

PUMP SHALL BE SUITABLE FOR MOUNTING VERTICALLY ON THE OIL TANK. BASE PLATE OF PUMP SHALL MATCH THE COUNTER FLANGE PROVIDED ON THE TANK AS PER SKETCH ON PAGE 14. SMOOTH FUNCTIONING IS ENSURED BY MAINTAINING OIL LEVELS AS DEPICTED IN THE ARRANGEMENT ON PAGE NO. 13.

5.3 DURING INITIAL START UP IN WINTER, OIL TEMPERATURE MAY GO AS BELOW AS 20°C.

#### MOTOR:-6.0

A SUITABLE MOTOR CONFORMING TO THE PUMP REQUIREMENTS SHALL BE SUPPLIED. FOR DETAILS ON MOTOR, PLEASE REFER ANNEXURE-I.

## 7.0 DESIGN AND CONSTRUCTION OF PUMP:-

ALL MATERIALS USED IN THE CONSTRUCTION OF THE PUMPS SHALL BE SELECTED FROM THE RANGE OF MATERIAL MOST APPROPRIATELY SUITABLE FOR THE PURPOSE AND SERVICE CONDITIONS. THE BIDDER SHALL FURNISH ALONGWITH THE OFFER MATERIAL SPECIFICATION FOR ALL THE COMPONENTS TO BHEL FOR THEIR REVIEW AND ACCEPTANCE BY BHEL/OWNER. BHEL/OWNER RESERVES THE RIGHT TO ASK FOR CHANGES IN MATERIAL. THE SIZE SHALL BE STANDARDISED SO AS TO ENSURE INTERCHANGEABILITY.

# SPECIAL TOOLS AND TACKLES

ONE SET OF TOOLS REQUIRED FOR ERECTION, OPERATION AND MAINTENANCE OF THE PUMPING SETS SHALL BE SUPPLIED TOGETHER WITH EACH PUMP. LIST OF THESE TOOLS SHALL BE SUBMITTED ALONGWITH THE OFFER.

THE MATERIALS OF CONSTRUCTION OF THE PUMPS SHALL BE SUCH AS TO RESIST CORROSION AND EROSION AND SHALL GIVE A LONG TROUBLE FREE SERVICE.

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fine sen TORY	REV. NO. 07	निर्माणकर्ता WORKED BY	DHARAMPAL	Blal	15/06/06
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#### ST- 39014 उत्पाद मानक दिनांक एवं इस्ताक्षर मी एम में समा SEGN & DATE PRODUCT STANDARD (STEAM TURBINE ENGINEERING) Page 3 Of 14 7.2 THE MATERIALS OF CONSTRUCTION OF THE PUMPS SHALL BE SUCH AS TO RESIST CORROSION AND EROSION AND SHALL GIVE A LONG TROUBLE FREE SERVICE. THE SUPPLIER SHALL ALSO FURNISH THE METHOD AND FREQUENCY OF अधिकमित करता मिनग्री सूची संख्या LUBRICATION OF THE BEARINGS AND QUANTITY AND TYPE OF LUBRICANT REQUIRED FOR NORMAL OPERATION. BUT LUBRICATION OF BEARINGS WITH THE DIL BEING HANDLED IS PREFERED. THE DESIGN SHALL BE SUCH AS TO KEEP THE FRICTIONAL LOSS AND WEAR CAUSED BY END THRUST TO THE MINIMUM IT WILL ALSO ENSURE MINIMUM WEAR COPYRIGHT AND CONFIDENTIAL, information on this documents is the property of Bharat Heavy teal Limited. It must not be used directly or indirectly in any way derimental to the litterest of the company AND CAVITATION IN MECHANICAL SEALS AND BEARINGS, LONG AND TROUBLE FREE SERVICE SHALL BE ENSURED. THE ROTORS OF THE PUMP SHOULD BE DESIGNED IN SUCH A WAY SO THAT MINIMUM VIBRATIONS ARE EXPERIENCED. THE SOUND PRESSURE LEVEL OF PUMP MOTOR SET SHOULD NOT BE GREATER THAN 85 dBA TO A REFERENCE OF 0.0002 MICRO BAR WHEN MEASURED AT A DISTANCE OF 1.5 METERS ABOVE FLOOR LEVEL AND ONE METRE HORIZONTALLY FROM THE BASE OF EQUIPMET AND VIBRATIONS ARE IN THE PERMISSIBLE RANGE AS PER VDI 2056. 7.5 SEALS MUST COMPLY WITH THE FOLLOWING PROPERTIES :-(a) READY ACCESS AND AMENABILITY FOR MAINTENANCE WORK . (b) NO CONTAMINATION OF THE MEDIUM FROM MATERIAL ABRADED FROM THE SEALS. (c) NO SEEPAGE OF LUBRICANTS INTO THE FLOW MEDIUM . The infort Electrical I. (d) MINIMUM LEAKAGE LOSSES WITH THEIR CONTROLLED REMOVAL, TO FACILITATE TRANSPORT AND ERECTION, LIFTING HOOKS OR ERECTION EYES SHALL BE FITTED AT SUITABLE POINTS ON THE COMPONENTS, THEIR LOCATIONS MUST BE SHOWN ON THE DIMENSIONAL DRAWING. इस दलेखा में ती गई सूत्रमा माएत हैयी इलेगिट्रकल्स की सम्पत्ति है इसका उत्पक्ष एवं एरस्य सप से फिसी भी तरह प्रयोग जो कि कंपनी के हिसमें शनिकारक हो न किया 7.7 PUMP BEARINGS SHALL BE DESIGNED SO AS TO ASSURE 50,000 hrs CONTINUOUS SERVICE FOR FRICTION BEARINGS & 30,000 hrs FOR BALL & ROLLER BEARINGS. एवं गोपनीय THE MECHANICAL DESIGN SHALL ALLOW EASY ACCESS TO VARIOUS PARTS OF CARRYING DUT MAINTENANCE WORK. THE DISCHARGE BRANCH OF THE PUMP SHALL BE TAKEN OUT ABOVE THE 7.9 BASE PLATE BY THE SUPPLIER. स्वत्वाधिकार 7.10 THE PUMPS SHALL BE PROVIDED WITH DRAINAGE AND VENTING DEVICES. 7.11 ALL SYSTEM PARTS CARRYING OIL SHALL BE OF OIL TIGHT CONSTRUCTION COMPRESSION-TYPE FITTINGS ARE NOT PERMISSIBLE. FOR SCREW PUMPS RUNNING AT SUBCRITICAL SPEEDS, IT SHALL BE ENSURED THAT THE CRITICAL SPEED LIES ABOVE THE MAXIMUM SPEED ATTAINABLE DURING OPERATION WITH A MINIMUM MARGIN ON 15% OF RATED SPEED. FOR PUMPS RUNNING AT SUPER CRITICAL SPEEDS, IT SHALL BE ENSURED THAT THERE IS DEFFERENCE OF SUFFICIENT MAGNITUDE (NOT LESS THAN 20%) BETWEEN THE OPERATING SPEED AND क्षिमा क SIGN & DATE THE BORDER IN CRITICAL SPEEDS. ALLOWANCES SHALL BE MADE FOR THE TYPE OF COUPLING BETWEEN THE PUMP AND MOTOR WHILE CALCULATIN THE CRITICAL SPEEDS. इस्ताकार एव 4 REV. NO. निर्माणकर्ता DHARAMPAL D/6/06 सामको सूकी संख्या INVENTORY NO. WORKED BY 07जांचकर्ता ANUJ JAIN

17/6/06

CHECKED BY

#### ST- 39007 उत्पाद मानक वित्रोक एवं इस्ताकार भी एग ई एम SIGN & DATE पुष्ठ 14 वा 4 PRODUCT STANDARD ( STEAM TURBINE ENGINEERING) Page 4 Of 14 ALLOWANCES SHALL BE MADE FOR THE TYPE OF COUPLING BETWEEN THE PUMP AND MOTOR WHILE CALCULATING THE CRITICAL SPEEDS. 7.13 COUPLING समग्री सूक्षी संख्याक्री SUITABLE COUPLING WITH GUARDS SHALL BE PROVIDED FOR COUPLING अधिकमित करता PUMP WITH MOTOR. IT SHALL BE DESIGNED TO FACILITATE EASY ALIGNMENT. ONE SET OF COUPLING BOLTS SHALL BE SUPPLIED IN SPARE. 7.14 **FOUNDATION** THE PUMP SHALL BE MOUNTED ON THE OIL TANK AND HUNG FROM BED documents is the property of Bharat Heavy t not be used directly or indirectly in any wa to the interest of the company PLATE AT THE TANK TOP INTO THE TANK. FOR FURTHER DETAILS PLEASE REFER PAGE NO. 12 AND 13. ALL THE SEATING MACHINED SURFACES OF COPYRIGHT AND CONFIDENTIAL BED PLATE TO BE MAINTAINED FOR 0.5 mm FLATNESS. 8.0 QUALITY ASSURANCE, INSPECTION AND TESTING (a) THE MANUFACTURER SHALL CONDUCT ALL TESTS REQUIRED TO ENSURE ALL THE COMPONENTS PART OF THE JACKING OIL PUMP OFFERED, CONFORM TO THE REQUIREMENTS OF THE SPECIFICATION AND IN COMPLIANCE WITH REQUIREMENTS OF APPLICABLE CODES AND STANDARDS. rmation on this d Limited. If must a detrimental to (b) THE BIDDER SHALL SUBMIT ALONGWITH HIS OFFER QUALITY PLAN. 8.1 THE PARTICULARS OF THE PROPOSED SHOP TESTS AND PROCEDURES FOR THE TESTS SHALL BE SUBMITTED TO BHEL/ITS CUSTOMER FOR APPROVAL ALONGWITH QUALITY PLAN. The infor Electrical THE MATERIAL SHALL BE DESPATCHED ONLY AFTER INSPECTION AND CLEARENCE OF MATERIAL BY BHEL OR ITS CUSTOMER AND APPROVAL OF TEST CERTIFICATE BY BHEL/ITS CUSTOMER. 8.2 THE MINIMUM TESTS/CHECKS TO BE CARRIED OUT ON THE JACKING OIL PUMP AS ENVISAGED BY BHEL ARE GIVEN BELOW. THIS IS, HOWEVER, NOT INTENDED TO FORM A COMPREHENSIVE TESTING PROGRAMME AS IT IS SUPPLIERS RESPONSIBILITY TO PREPARE THE DETAILED QUALITY PLAN, WHICH SHOULD ALSO INCLUDE TESTS/CHECKS CARRIED OUT BY SUPPLIER AS A PART OF THEIR NORMAL PARACTICE. THIS QUALITY PLAN IS SUBJECT TO THE APPROVAL OF BHEL /ITS CUSTOMER AND BHEL/ITS CUSTOMER RESERVES THE RIGHT TO ASK FOR ANY MORE CHECKS AT THE TIME OF QUALITY PLAN FINALISATION. इस एसेखा में थी नई सूखना मारत हेगी इसेन्द्रिसम्बन्ध की सम्पत्ति है इसका प्रत्यक्ष एवं एस्पत्त कप से किसी मी तरह प्रयोग, जो कि कंपनी के हिम में हानिकारक हो न बिगा छाए 8.3 एवं नोपनीय स्वत्वाधिकार 8.3.1 TESTING OF MATERIALS THE MATERIAL OF EACH COMPONENT SHALL BE TESTED AS PER RELEVENT SPECIFICATION FOR ITS CHEMICAL COMPOSITION AND MECHANICAL PROPERTIES, VIZ. YS, UTS, IMPACT, % ELONGATION % RA ETC. AND NDT, UT ON SHAFT, MPI ON SCREWS AND CASING ETC. TO ENSURE FREEDOM SUBJECT AND SUBJECT OF SHALL BE CARRIED OUT. ण त्यस कम से किली FROM SURFACE AND SUB-SURFACE DEFECTS SHALL BE CARRIED OUT. 8.3.2 FOLLOWING TESTS SHALL BE CARRIED OUT DURING VARIOUS STAGES OF MANUFACTURE AT MANUFACTURER WORKS. DATE CHECK FOR DIMENSIONS OF ALL COMPONENT PARTS INCLUDING (a) विमांक SURFACE FINISH, AXIAL AND RADIAL RUN OUT OF SHAFT ETC. हस्तामाय एक SIGN & NON-DESTRUCTIVE EXAMINATION :- UT FOR SCREW BLANKS & DPT/MPI ON (b) đ SCREWS TO BE CARRIED OUT TO ENSURE SURFACE / SUB-SURFACE DEFECTS. REV. NO. DHARAMPAL निर्माणकर्ता INVENTORY NO. 17/6/06 WORKED BY सामग्री सूझी संख्या 075476 जांचकर्ता ANUJ JAIN Dair. 17/4/06 CHECKED BY

#### ST- 39007 दिनाक एव हस्ताक्षर SIGN & DATE डत्पाद मानक बीएच ई एल पुद्ध 14 का 5 PRODUCT STANDARD ( STEAM TURBINE ENGINEERING) Page 5 of 14 SUPERSEDEN INVENTORY CHECK THE CONDITION OF THE OIL SEALS AND ANY SEEPAGE OF (c) OIL THROUGH SEALS ETC. करता क्ष संख्या HYDRAULIC TESTING OF THE CASING AND OTHER PRESSURE PARTS SHALL BE (d) 軍 अधिकमित AS PER VDMA 24284. (e) CHECK FOR DIRECTION OF ROTATION OF PUMP. (f) PERFORMANCE TEST WITH CALIBRATED TEST BED MOTOR FOR VERIFICATION OF COPYRIGHT AND CONFIDENTIAL The information on this documents in the property of Bharst Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company PUMP CHARACTERISTICS, VIZ. DISCHARGE AT THE GIVEN PRESSURE SCHEDULE OF POWER CONSUMPTION, NOISE AND VIBRATION LEVEL AS PER VDMA 24284. STRIP DOWN TEST TO CHECK THE CONDITION OF BEARING, MECHANICAL (g) CLEARANCES AND AXIAL PLAY OF SHAFT ETC. AFTER TESTING THE PUMP, ALL THE SURFACES AND INTERNALS SHALL BE THOROUGHLY CLEANED, DRIED AND CONSERVED. ALL METALLIC SURFACES EXCEPT 8.3.3 BRIGHT PARTS EXPOSED TO WEATHER SHALL BE GIVEN A SUITABLE PRIMING COAT AND THEN TWO COATS OF APPROVED PAINTS. ENSURE ASSEMBLY OF ALL THE COMPONENTS OF PUMP AS ONE UNIT AND PACK IN WATER AND DUST PROOF PACKAGE. THE PACKAGES SHOULD BE SUFFICIENTLY STRONG TO SAFEGAURD AGAINST ANY DAMAGE DURING TRANSIT AND IS SAFE FOR TWO YEARS IN A VERY DAMP SATMOSPHERE. TEST CERTIFICATES INDICATING THE ACTUAL TEST RESULTS OF MATERIAL TESTING, 8.3.4 NDT, HYDRAULIC TEST, PERFORMANCE TEST, STRIP DOWN EXAMINATION Etc. SHALL प्रलेख में दी गई शुक्ता भारत हेवी इलेक्ट्रिकल्स की सम्पत्ति है इसका प्रत्यक्ष एव रूप से किसी मी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो भ किया जाए BE FURNISHED. 9.0 PRE-APPROVAL DOCUMENTS AT THE TIME OF OFFER 9.1 ASSEMBLY DRAWING WITH PART LISTS, NOZZLE SIZES AND THEIR COORDINATES, स्वत्वाधिकार एवं गोपनीय BASE PLATE DETAILS AND CROSS SECTION ARRANGEMENT ALONGWITH STATIC LOADING. 9.2 CALCULATIONS WITH NECESSARY DRAWINGS (TORQUE/SPEED CHARACTERISTICS Etc), POWER REQUIREMENTS, TORQUE SETTING VALUE FOR MOTOR TRIP, PERMISSIBLE TORQUE VALUE FOR KEY AND POWER SHAFT. MAXIMUM MAGNETIC AND NON-MAGNETIC PARTICLE SIZE, WHICH CAN PASS 9.3 THOROUGH PUMP SCREW LY CLEARANCE WITHOUT DAMAGING THE PUMP SHALL इस प्रलेख में दी गई। BE SPECIFIED IN THE OFFER. 9.4 QUALITY PLAN WITH DETAILS OF QUALITY LEVELS AND MANUFACTURING TOLERANCES. भ्रप्रत्यक्ष THIS SHOULD GENERALLY CONFORM TO VDMA 24284. GENERALLY ACCELTED PRACTICES, IN PARTICULAR VDMA CODES AND STANDARDS OR EQUIVALENT SHALL BE APPLIED AND TAKEN INTO ACCOUNT FOR DESIGN OF SCREW PUMPS. THE CODES OF STANDARDS APPLIED IN EACH CASE SHALL BE SPCIFIED IN THE OFFER. DATE FOR DOCUMENTATION ON MOTOR, PLEASE REFER ANNEXURE—I. EXAMINATION OF THE PRE—APPROVED DOCUMENTS BY BHEL SHALL NOT RELIEVE THE MANUFACTURER AND HIS SUBCONTRACTORS OF THEIR RESPONSIBILITIES. 9.5 0 हस्तासर एव SIGN & C 3 THE PRE-APPROVED DOCUMENTS SHALL FORM THE BASIS FOR THE ORDER. NO CHANGES SHALL BE MADE WITHOUT APPROVAL FROM BHEL. REV. NO. निर्माणकर्ता DHARAMPAL HEET INVENTORY WORKED BY 26-06-67 08 Š जांचकर्ता ANUJ JAIN 4 CHECKED BY 1/ É **26-06-0**7 सामग्री

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मामक्रा मुची अभ्या का सम्बद्धामान करता है।		THESE SHALL BE SUPPLIED EITHER IN AND A SET OF REPRODUCCIBLE. SCHEDULE	FIVE COPIE OF DOCUMEN									
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J. ANJ) CC ments is the pro- rectly or induce arest. of the cor-	10.5 10.6	LIST OF TOOLS AND TACKLES THE STATIC AND DYNAMIC LOADING DETA ON SUPPORT/FOUNDATION SHOULD BE FURNI			EEKS EEKS							
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स्वत्ताधिकार एवं गोपनीय कि प्राप्त स्थापन कि प्राप्त कि कि कि प्राप्त कि कि कि प्राप्त कि कि कि प्राप्त कि कि कि प्राप्त कि प्राप्त कि कि	11.0 11.1 11.2 11.3 11.4 11.5 11.6 11.7 11.8 11.9 11.10	TYPE / DESIGNATION MANUFACTURER MANUFACTURER'S WORKS NO. YEAR OF MANUFACTURING PURCHASER'S ORDER NO. VOLUMETRIC FLOW ( I/m) DISCHARGE PRESSURE (Bar/MWC) OPERATING TEMPERATURE (*C) FLOW MEDIUM. SPEED. BILINGUAL IN HINDI AND ENGLISH LANGU		LD BE A	S FOL	LOWS:						
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SWENTORY NO -5474	REV. NO. 07	·	निर्माणकर्ता WORKED BY	DHARAI	MPAL	Dol	n	1/06/0				
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#### ST- 39007 हत्पाद मानक SIGN & DATE बी एच ई एम पृद् का 14 7 E PRODUCT STANDARD ( STEAM TURBINE ENGINEERING) Page 7 of 14 SUPERSEDES INVENTORY 12.0 CLEANING, PAINTING, CONSERVATION & PACKING: THE SURFACE SHALL BE CLEANED & PREPARED FOR APPLICATION OF THE COATINGS BY BLASTING WITH NON-SILICATIC ABBRASIVE AGENTS. THE PROTECTIVE COATING SHOULD BE OIL RESISTANT TO PREVENT COTAMINATION OF OIL SPECIFIED TO PREVENT THE DETERIORATION OF THE COATING ITSELF. THE SUPPLIER अधिकमित करता है L COL सूची SHALL GIVE EXACT AND PRECISE DETAILS ABOUT THE MEASURES ENVISAGED BY HIM FOR SURFACE PROTECTION, WHICH SHALL BE CHECKD AND APPROVED BY BHEL. INSTRUCTIONS SHOULD BE ISSUED REGARDING RECONSERVATION, DECONSERVATION ALONGWITH SPECIFICATION OF MATERIAL TO BE USED FOR ABOVE PURPOSE. 100% COPYRIGHT AND CONFIDENTIAL The information on this decuments in the property of Bhazar Heavy Electrical Limited. In that not be used directly or indirectly in any way derininents to the interest of the company QUANTITY OF MATERIAL REQUIRED FOR RECONSERVATION AND DECONSERVATION AT SITE DURING STORAGE SHALL BE SUPPLIED ALONGWITH PUMP. ANY SPECIFIC INSTRUCTION TO BE FOLLOWED DURING STORAGE AT SITE TO AVOID ANY SEIZING ETC. SHALL ALSO BE INTIMATED. ALL SUCH INSTRUCTIONS SHALL BE MADE AVAILABLE TO SITE INCHARGE IN A SEPARATE COVER ( NOT PACKED WITH PUMP PACKAGE ). THE SUPPLIER SHALL BE RESPONSIBLE FOR ALL LOSS OR DAMAGE DURING TRANSPORTATION, HANDLING AND STORAGE DUE TO IMPROPER PACKING. 13.0 **GENERAL** THE SUPPLIER CAN MAKE SUITABLE OFFERS EVEN IF THERE ARE MINOR DEVIATIONS WHICH DO NOT AFFECT THE EFFICIENT FUNCTIONING OF THE EQUIPMENT. HOWEVER, THE DEVIATIONS MUST BE CLEARLY SPELT OUT. SUPPLIER SHALL ALSO FILL IN THE BLANK DATA SHEET AS PER ANNEXURE-II AND SUBMIT THE SAME ALONGWITH THE OFFER. THE OFFER MAY NOT BE CONSIDERED IF ALL THE TECHNICAL PARTICULARS AND INFORMATIONS CALLED FOR IN THE SPECIFICATION प्रतेख में दी गई सूचना भारत हेवी इस्तेदिद्धकला की सन्यक्ति है इसका प्रत्यक्ष एवं रूप से किसी मी तरह प्रयोग, जो कि कंपनी के हित में हानिकारक हो न किया जाए ARE NOT SUBMITTED ALONGWITH THE OFFER. 14.0 **GUARANTEE** 14.1 THE SUPPLIER SHALL GUARANTEE TROUBLE FREE AND SATISFACTORY OPERATION स्वत्वाधिकार एवं गोपनीय OF THE EQUIPMENT FOR A PERIOD OF 12 MONTHS AFTER THE INSTALLATION AND COMMISSIONING OR FOR A PERIOD OF 18 MONTHS FROM THE DAY THE EQUIPMENT LEAVES THE SUPPLIER'S WORKS WHICHEVER IS EARLIER. THE SUPPLIER SHALL GUARANTEE THE CAPACITY, HEAD AND EFFICIENCY OF THE PUMP AS PER THE TESTED CHARACTERISTIC WITH OIL. IF DURING ERECTION AT SITE ANY DEFICIENCY IN A PART IS DETECTED. BHEL 14.3 SITE REPRESENTATIVE SHALL PREPARE THE ASSESSMENT REPORT AND A COPY OF इस प्रलेख में दी गई THE SAME SHALL BE FORWARDED TO THE SUPPLIER. THE SUPPLIER SHALL REPLACE/ RECTIFY THE CONCERNED ITEMS FREE OF CHARGE. THE SUPPLIER IF HE SO DESIRE MAY DEPUTE HIS REPRESENTATIVE TO SITE OTHERWISE THE FINDING OF BHEL REPRESENTATIVE SHALL BE FINAL AND BINDING ON THE SUPPLIER OF PUMPING SET. 14.4 THE SUPPLIER SHALL REPAIR/REPLACE THE DEFECTIVE PARTS AT HIS OWN COST DURING THE GUARANTEE PERIOD. DATE विनाक 15.0 **SPARES** 5 જ C हस्ताक्षर THE SUPPLIER SHALL QUOTE ITEMWISE PRICE OF RECOMMENDED SPARES SIGN ٨ FOR 3 YEARS AND 5 YEARS OPERATION RESPECTIVELY. REV. NO. निर्माणकर्ता DHARAMPAL गमग्री सूची संख्या INVENTORY WORKED BY 26-06-07 08 Š जांचकर्ता ANUJ JAIN 4 CHECKED BY 26-06-07

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विमांक एवं हस्ताक्ष StGN & DATE	H	PROD	UCT, STA	ANDAF	RD ·	पृष्ट	14	वा	8		
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				· · · · · · · · · · · · · · · · · · ·		Al	NEXU	RE -			
		SPECIFICATION	OF D.C.	MOTOR	FOR JA	CKING	OIL P	UMP			
लगरी मूची संख्यः को अधिक नित्त करतः ह	1.0	A SUITABLE MOTO SHALL BE SUPPLIED. TH IS:3202, EQUIVALENT. STATUTORY REQUIREMEN	BS SPECIFICA	IG TO THI IALL CONI ITION, TH	E JACKIN FORM TO E MOTOF	G OIL PU IS:4722, R SHALL	MP REG IS:225 MEET A	QUIREN 3, IS::	IEN 225 DIAI		
5 % 2 %	2.0	APPLICATION  TO DRIVE OIL PUN BEARINGS.	MP FOR SUPE	PLYING OII	FOR 11	FTING TUE	- CUAI	T (N) T	-1 ur-		
TAL terat Hear tly in any	3.0	TYPE OF MOTOR:	SEPARATELY								
IDENT	3.1	COMPOUNDING.  KW RATING				30/10/10/	DIOI V	(1111 11	J/6		
CONF is the pro- 1 directly est of the		IT SHALL HAVE AT DRIVE THE PUMP WHEN	LEAST 15%	RESERVE	CAPACI	TY THAN	REQUIR	RED TO	)		
COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited.It must not be used directly or indirectly in any way detrimental to the inferent of the company	DRIVE THE PUMP WHEN IT IS DISCHARGING MAXIMUM QUANTITY.  3.2 KW ACTUALLY REQUIRED BY DRIVE EQUIPMENT : PUMP UNDER SPECIFIED OPERATING AND START UP CONDITIONS.										
PYRIC nation on imited.it is detrimen	3.3	RATED VOLTAGE					0 V D.				
CO The lations ectrical L	3.4	PERMISSIBLE VOLTAGE V UNDER NORMAL RUNNIN	ARIATIONS	c			0 V D. 5%	C. FIE	LD		
EE	3.5	MINIMUM VOLTAGE REQUIRE CONDITIONS TO BRING DRIV UPTO RATED SPEED.	FD UNDER STA	DTIMO :			10% % RATE	.D			
इसका प्रद रक्ता भिष्	3.6	TYPE OF DUTY				: CO	NTINUO	US			
थी गई कुषणाभारत होती दरीके प्रकल्प की सभातित है प्रमाण । एटका किसी मी तत्त्व प्रयोग जो कि कंटनी के विसर्त कानिकारक हो न किया ।	3.7	FULL LOAD SPEED		: I	T SHALL	BE COMP EED AS F	MENSUR	RAT WI	ΤН		
क्षेत्र स्थापना स्थापन स्थापन स्थापन स्थापना स्थापना	3.8 3.9	FULL LOAD CURRENT STARTING CURRENT		: A	S PER I	DESIGN					
महियो दशिक्ष विद्या किथ	3.10	STARTING TORQUE				CURRENT					
सूचना भारत है नी तंशह प्रयोग	3.11	EFFICIENCY AT FULL LO	)AD	: 2	35% (mir	TORQUE AT	I KAIEL	) VOLT	S.		
में में क्ष		STARTING DATA									
DAYRE इस वर्तेखा में यो गई सूचना भार	\ S H	STARTING: SUITABLE FOI STEEL SHALL BE ENCLO FENTILATION. CABLE ENT SHALL BE PROVIDED TO HOUSING, VALUES OF STA STEPS SHALL BE PROVID HAVE IP21 (MIN.) DEGRE	USED IN A S TRY SHALL BI MOUNT THE ARTING RESIST, FD IN THE OF	EUITABLE E PROVID HOUSING ANCES AN	HOUSING ED AT T ON RAC	DESIGN HE BOTO KS. G.A.	ED FOR M. ARR DRAWIN	R NATI ANGEN G OF	UR. MEN TH		
SKIN & D	4.2	PERMISSIBLE STARTING DUT NO. OF STARTS.		3 STAR	TS SPRE UTIVE STA	AD OVER IRTS.	AN HO	UR TW	0'		
DE	V NO			3							
	V. NO.			निंमणिक Worke		ARAMPAL	18/0	17/6	100		
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ا ت	Richer	PRODUCT	STAN	JDA	RD	पृष्ठ	14 व	9
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	4.3	STARTING RESISTANCE BOX / PA	ANEL SHAL	L BE	IN VENDO	SCOPE OF	SUPPLY.	
	4.4	OVERLOAD (% OF FULL LOAD) T CAN BE CARRIED BY MOTOR IMPAIRING, OVERALL PERFORM AND PERIOD FOR WHICH THIS	MANCE	25%	FOR 5 M	AINUTES.	·	
מגעון		OVERLOAD IS APPLICABLE.				1 1 1		
अशिकमित करता है		LOCATION			BINE HALL			u nes
	4.6	CLASS OF INSULATION		AS F	PER IS:320	CUS RESISTANT D2, WITH TEMI HAT OF CLAS	PATURE R	
iy way	4.7	WINDING TEMP. DETECTORS			BE PROVID			
IAL yinat yina	4.8	MECHANICAL CONSTRUCTION				# 1 1 1 # 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	:	
of Bha freedt	4.8.1	SHAFT DISPOSITION/MOUNTING	3:		•	NGE MOUNTE		
CONFIDENTIAL is the proporty of Bharat H idirectly or indirectly in a est of the company	4.8.2	METHOD OF CONNECTION TO DRIVEN EQUIPMENT.	:			BLE COUPLIN	NG.	
AND CO	4.8.3	DIRECTION OF ROTATION AND CORRESPONDING TERMINAL DESIGNATION.	:	ТО	SUIT PUM	<del>)</del> .		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4.8.4	ENCLOSURE AND VENTILATION	l :	TOTA	ALLY ENCL	OSED FAN C	OOLED IP	-55.
COLYKIGH information on this cal Umited It must detrimental	4.8.5	BEARING	IG, MINIMUM ! AN 30000 W					
COPY RIGHT AND CONFIDENTIAL The information on third occurrents is the property of Bharst Heavy Electrical Limited. It must not be used directly or indirectly in any way detrimental to the interest of the company	4.8.6	GROUNDING DEVICE	THE MOTOR A	EMENT SHALL BE PROVIDED IN MOTOR AT TWO SEPARATE ONNECTION POINTS. THING CONDUCTOR SHALL				
ह एवं 1 जेगए					AS PER I			
ग्रुप्तस्याः ।नक्तिय	1	TERMINAL CONNECTORS				URE, 2 FOR		144711
कार एवं गोपनीय धो हरेरिट्सरस मामारित है इसका धरण से कि कंपनी से हित में हानिकारक हो निक्या	4.9	TERMINAL BOX	• •	DOU GLA DUT COP ALU	BLE COMPF NDS (Nick Y, CONFIR PER CABLE MINIUM CA	C SHALL BE I RESSION TYPE EI Chromium MING TO BS: LUGS TO MA BLES, THE S TIMATED LATE	BRASS CA PLAED H 6121) AN TCH OWNE IZE OF W	ABLE HEAVY ID IR'S ITCH
स्यात्याघिकार्थ इक्त प्रजेख भेथी नई सूचना शास्त हेथी दर्ज धपत्यक्ष क्रम से किसी भी तरह धयोग जो कि				ROT 90°. OF TO	ATED THR IT SHALL H IP-55. IT	BE CAPABLE OUGH 180° I AVE A DEGREE SHALL ALSO THE FAULT LE CONDS.	IN STEPS OF PROTEC BE SUITA	OF TION NBLE
- F	4.10	SPACE HEATERS	:	то	BE PROVI	DED AS PER	DESIGN	
pate P	4.11 5.0	VOLTAGE SPECIAL REQUIREMENTS:	:		VOLTS A			
SIGN & DA	5.1	SEPARATE TERMINAL BOX FOR HEATERS SHALL BE PROVIDED OF OIL FUMES.						
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		I RODUCT STANDA	AND		.90	10	01	14
SUPERSEIDES INVENTORY NO.	5.2 •5.3	THE MOTOR SHALL BE RE-WOUNDABLE, THE MOTOR SHALL HAVE ON LINE GREASING	O EXCILEDY	,				
PERSI	. 5.4	THE MOTOR CONSTRUCTION SHALL BE SUITA		EASY DISASS	EMBL	_Y		
25 5	5.5	AND REASSEMBLY.  MOTOR SHALL BE PAINTED WITH PAINT SUIT	TABLE FOR	WORKING C	ONDIT	ION		
를 하는 다. 등 등 등	5.6	AND ITS COLOUR SHALL BE INTIMATED LATE THE MOTOR SHALL BE THOROUGHLY DEGR	R ON.					
सामग्री सूची सन्या का इत्रिकामित उन्दर्भ है		SCALES REMOVED AND TREATED WITH ONE CO	OAT OF PRI	MER AND T	VO C	OATS		
SIFT,	6.00	OF ENAMEL PAINT. FAN SHALL ALSO BE PAIN <u>TESTS AT MANUFACTURER'S WORKS:</u>	NTED TO WI	THSTAND CO	)RROS	SION.		
- 2	(i)	MOTOR AFTER COMPLETE ASSEMBLY SHALL E						
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TAI, Heavy, F	(ii) (a)	IN ADDITION THE FOLLOWING TESTS SHALL A DEGREE OF PROTECTION TEST TO CONFORM			GRFF	ΩF		
ENT Sharat P		PROTECTION (TYPE TEST).			OIVEL	O,		
COPYRIGHT AND CONFIDENTIAL matter on this documents is the property of Bharat Heavy must not be used directly or instructly in any way derrin interest of the company.	. (b) (c)	20% OVERSPEED TEST FOR 2 MINUTES (ROUMEASUREMENT OF VIBRATION (ROUTINE TEST						
(CO)		MEASUREMENT OF NOISE AS PER IS: 12065.	-		HALL	BE		
ANU)		LIMITED SO AS TO ACHIEVE PUMP-MOTOR S CLAUSE 7.4 ON PAGE-3.	SET NOISE L	EVEL AS G	VEN	IN		:
J.I.F. docume ed direc intere	7.0	DOCUMENTS TO BE SUPPLIED WITH OF	FFER:-					
YRIC on this of be us	7.1	THESE SHALL BE SUPPLIED IN TWO COPI TYPE AND FRAME SIZE.	ES EACH.					
COP matten must n		STARTING TIME IN SECONDS.						
COP The information		WITH 100% VOLTAGE AT TERMINALS. WITH 85% VOLTAGE AT TERMINALS.						
65	1	WITH 80% VOLTAGE AT TERMINALS. WITH 80% VOLTAGE AT TERMINALS.						
्व जार		SAFE STALL TIME AT 100% RATED VOLTAGE	UNDER HOT	CONDITION		•		
इसके प्रत्यक्त एव ए हो च १केसा जाए	ł .	MOTOR GD VALUE. WEIGHT OF MOTOR / ROTOR						
		EXPECTED LIFE OF BEARING.  TYPE AND SIZE OF CABLE FOR WHICH GLAN	ID IS BROW	DED IN THE				
रोपनीय ज्ला के मधाक्ष है इस ७ हिसमें सम्बह्धरू		THE TERMINAL BOX.						
सोप १००१ म ७ क्षि	7.11 7.12	MOTOR KW RATING CALCULATION . W.R.T PUVALUE OF STARTING RESISTANCE / RESISTAN		EMENT.				
रि एट इलेक्ट्र इक्रम्भ		DATA IN RESPECT OF ALL ITEMS MENTIONED AT F		5.0 OF ANN	EXURE	E−I.		
स्वत्वाधिकार् एवं गोपनीय (बन्नमभ्त हेर्म इन्नेक्ट्रभम्भाःम भग्ना १४ प्रयोगः अकि स्माज क्षाम साथ	8.0	DOCUMENTS TO BE FURNISHED WITHIN FOUR WE	•			_		
स्वत्वाधिकार् एवं गोप ६म ४तन्य १८० १६ मृत्यासका स्वाह्येष्ट्रका क इत्रथम रूपमा १८० में १६९ योग जो कि करने का का	8.1	SIX HARD COPIES AND ONE SOFT COPY (IN SHEET AND G.A. DRAWING,		,		DATA		
स के किया है। जिल्लाहरू		DRAWING SHOWING TERMINAL DETAIL OF ALL TE DIMENSION OF TERMINAL BOXES.	ERMINALS AN	ID LOCATION	AND			
१४.स.च ४ क्या व्ह	8.3 8.4	ROTOR WEIGHT AND TOTAL MOTOR WEIGHT.				÷		
カイン	9.0	CHARACTERISTIC CURVES OF THE MOTOR. SIX COPIES OF TESTS CARRIED OUT AS PER						
		MOTOR SHALL BE FURNISHED TO BHEL FOR ON ACCEPTANCE FROM BHEL SIDE, MOTOR	SCRUTINY A	ND APPROV	AL. O	INLY II F		
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SUPERSEDES INVENTORY													,		ANN	NEX	URE-	-II		
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T AND CONFIDENTIAL decuments is the property of Bharat Heavy	lectrical Limited.It must not be used directly or indirectly in any way detrimental to the interest of the company	1.1 PUMP AS PER SPECIFICATION 1.2 MOTOR/MAKE 1.3 NECESSARY INSTRUMENTS, TEST CONNECTIONS. 1.4 BASE PLATE AS PER DRAWING. 1.5 COMPANION FLANGES 1.6 SPARE PARTS 1.7 MAINTENANCE AND SPECIAL ERECTION TOOLS. 1.8 COMMISSIONING OF THE SET. 1.9 NO. OF PUMPS OFFERED. 2.0 DESIGN AND PERFORMANCE.																		
COPYRIGHT The information on this do	Electrical Limited.It mus detrimental	2.1 DESIGNED CAPACITY OF EACH PUMP. 2.2 NORMAL DISCHARGE PRESSURE 2.3 EFFICIENCY 2.4 RATED SPEED											M <sup>3</sup> /hour YES/NO							
हस्ताझर एवं सिनाक IGN & DATE हस्य तत्रिक हमें गर्म अबना अपने हेमी क्षेत्र के प्राणान के	यूचना नारत हमा . तरह प्रयोग, जो I		2.5 PERFORMANCE GUARANTEED WHEN INSTALLED AS PER GIVEN ARRANGEMENT. 2.6 PUMP b.h.p./Kw AT RATED CAPACITY 2.7 MAXIMUM ALLOWABLE SUCTION LIFT (FOR MINIMUM NPSH REQUIRED) 2.8 MAXIMUM DISCHARGE PRESSURE FOR WHICH PUMP IS SUITABLE. 2.9 PARTY SHALL INFORM THE FILTERATION LEVEL OF T MEDIA FOR PROPER FUNCTIONING OF PUMP. 3.0 MATERIAL OF CONSTRUCTION 3.1 CASING 3.2 DRIVING AND DRIVEN SPINDLE SCREW 3.3 BASE PLATE 3.4 WEARING RINGS 3.5 TYPE OF BEARINGS USED 3.6 TYPE OF COUPLING 3.7 PACKING 4.0 CONNECTIONS 4.1 SUCTION SIZE 4.2 DISCHARGE SIZE								DF THE									
हस्तामर ए SIGN &	1317		<b>5.0</b> 5.1	GE	ENERA NCLOS		RANGEM TH OFF	IENT AN FER.	ND SECT	IONA	L DRAW	/ING		YES/I	40			-		
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	6.0	WEIGHT SCHEDULE	9		•
समग्री सूषी संख्या को अधिकमित सरता है	6.1 6.2 7.0	WEIGHT OF MOTOR	8		
अस्मि	7.1	POWER CONSUMPTION / DISCHARGE PRESSURE			
leavy ny way	7.2	DISCHARGE QUANTITY / DISCHARGE PRESSURE DISCHARGE QUANTITY / EFFICIENCY			
CONFIDENTIAL is the property of Bharat Heavy ed directly or indirectly in any way rest of the company	8.0 9.0 10.0	ANY DEVIATION TAKEN AGAINST SPECIFICATION.  DEVIATIONS TAKEN AS MENTIONED HERE  HYDRAULIC TEST PRESSURE		YES/	'NO
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COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Bharat Heavy Electrical Limited. It must not be used directly or indirectly in any way detrilmental to the interest of the company		JACKING OIL PUMP (JOP) WITH MOTOR	► DISCHARGE		BASE PLATE
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#### ST-39007 विनांक एवं कृष्धातार SIGN & DATE उत्पाद मानक भी एग ई एम पृष्ठ वा 14 14 PRODUCT STANDARD ( STEAM TURBINE ENGINEERING) Page 14 Of 14 BED PLATE EXISTING ON OIL TANK HOLES #18 X ±0.3 समयी मूची संख्याको अधिक्रमित करता है ₹±0.3 COPYRIGHT AND CONFIDENTIAL The information on this documents is the property of Blearst Heavy Electrical Lumined. It must not be used directly or indirectly in any way detriments to the interest of the company B±0.3 G±0.3 F±0.3 F±0.3 **Y±0.3** C±0.3 F±0.3 G±0.3 हत एते छने थे भी नाई सुबन्ध मारह होते हैं होतियूकरत की सम्पत्ति है दूसका रुधका एवं उपस्था का से किसी मी तरह प्योग, जो कि संघमी के हित में हारिकारक हो न किया जाए H±0.3 J±0.3 A±0.3 स्वत्वाधिकार एवं गोपनीय BED PLATE A±0.3 B±0.3 C ±0.3 D ±0.3 E±0.3 G±0.3 H ±0.3 J ±0.3 NO. OFF HOLES F±0.3 Y ±0.3 X±0.3 AA 700 700 50 250 450 650 80 80 12 BB 700 700 35 245 455 665 \_ 60 60 12 CC 1320 900 30 240 450 660 870 1080 1290 85 85 20 SIGN & DATE इस्ताकार एवं विनाक REV. NO. निर्माणकर्ता DHARAMPAL Mel 17/6/06 सामग्री सूक्षी संख्या INVENTORY NO. WORKED BY 5474 07

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# **QUALITY PLAN**

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