



एन एच पी सी लिमिटेड
(भारत सरकार का उद्योग)
NHPC Limited
(A Govt. of India Enterprise)

चमेरा-II पावर स्टेशन/
Chamera-II Power
Station
कर्मगं, चंबा (हि.प्र.) / Karian,
P.O. Hardaspura

Ref:-NH /CPS-II/Cont/E- 123683/2024-25/113

Date: 24.09.2024

CORRIGENDUM NO.-1

Name of Work:	Repair along with HP-HVOF coating of Runner (1 Nos.) and Guidevane set (2 sets) for 3X100 MW Francis hydro turbines of Chamera-II Power Station.(E-FILE: 123683)
Tender Specification No.:	NH/CPS-II /Cont./E- 123683/2024-25/20 Date:03.09.2024
Tender ID:	2024_NHPC_824245_1

In reference to subject tender, following is hereby extended as under:

Sr. No.	Clause No.	Description of referred clause	As per existing provision of Tender Document	Modified Provision of Tender Document
1	SECTION-V	QAP/DRAWING	Addition of Photograph of Damaged Guide Vane and Runner with Total Area to be Repaired.(Annexure 1&2)	
NIT Clause 1.2 - Critical Dates of Tender				
1	Sl. No. (iv)	Online Bid Submission End Date & Time	24.09.2024, 18:00 Hrs.	01.10.2024, 15:30 Hrs.
2	Sl. No. (v)	Last date of submission of Cost of Bidding document, EMD/ Bid Security and other offline supporting documents	26.09.2024, 16:00 Hrs.	03.10.2024, 16:00 Hrs.
3	Sl. No. (vi)	Bid Opening Date & Time i. Technical bid along with offline documents	30.09.2024, 15:30 Hrs.	07.10.2024, 15:30 Hrs.

All terms & conditions of the tender document shall remain unchanged.

for
Group Manager (E)

Procurement & Contracts Division

Chamera II Power Station, Karian, Chamba (HP) – 176310

Report for the assesement of extent of damage on Runner Unit # 3**Photographs: Runner**

PIC-1



PIC-2



PIC-3



PIC-4



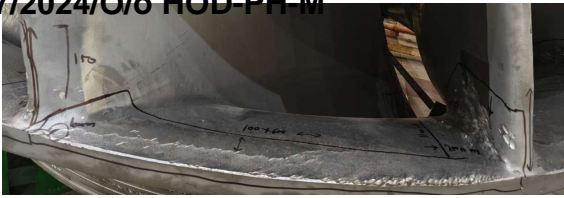
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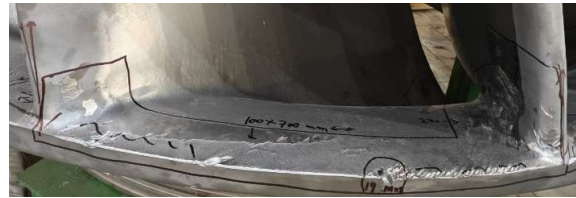
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1021317/2024/O/o HOD-PH-M



PIC-7



PIC-8



PIC-9



PIC-10



PIC-11



PIC-12



PIC-13



PIC-14



1021317/2024/O/o HOD-PH-M

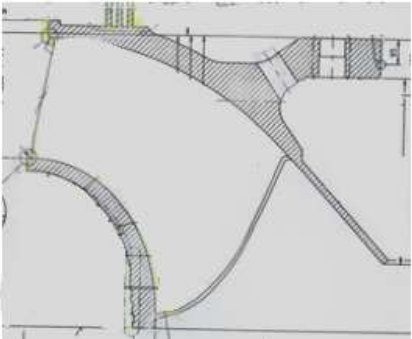
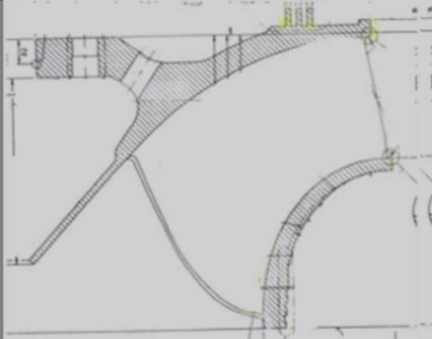
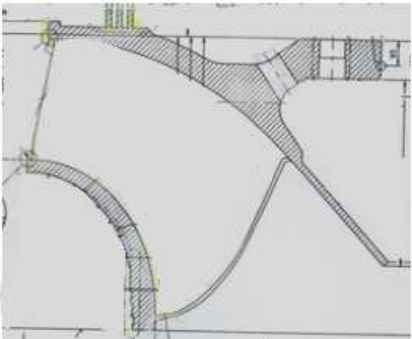

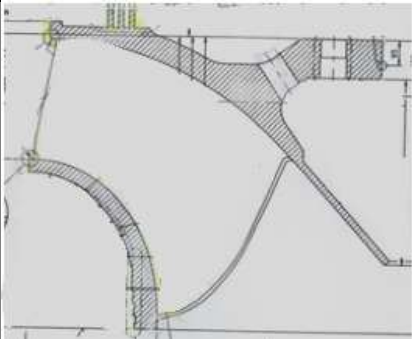
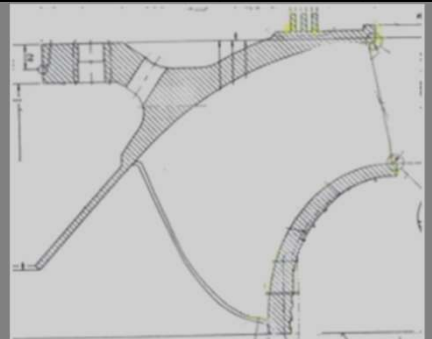


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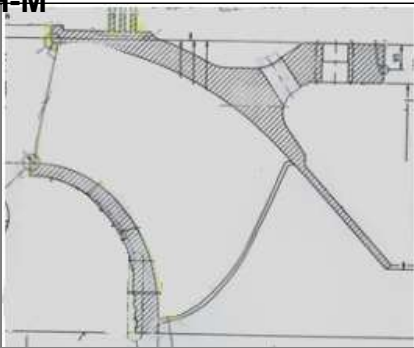
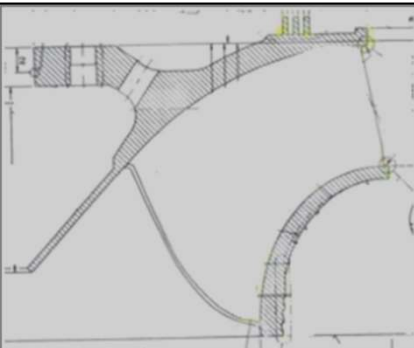
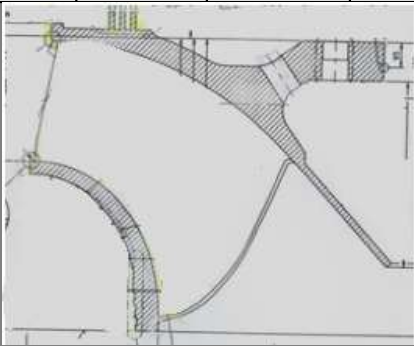
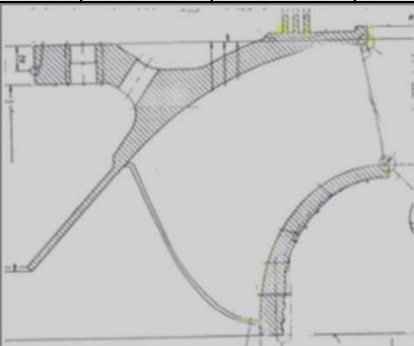
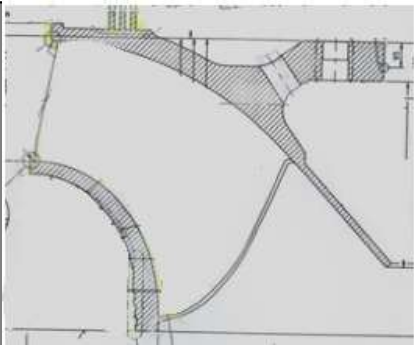
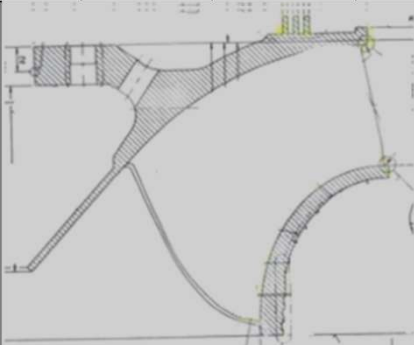
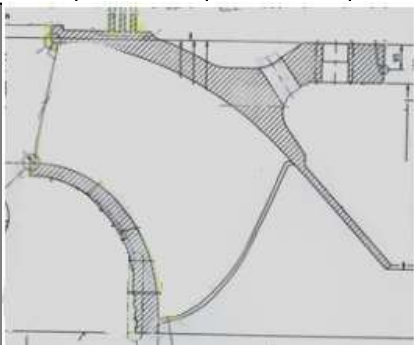

RUNNER WEIGHT REPORT

Item	Identification code	Retrieved From Unit	Before Repair (weight in kgs)	Required After Repair (weight in kgs)
Runner 01 No.	UR#1	Unit # 3	Runner (with both labyrinths)	
			18110	17929 \pm 0.5%

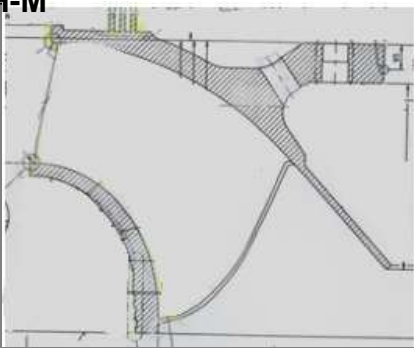
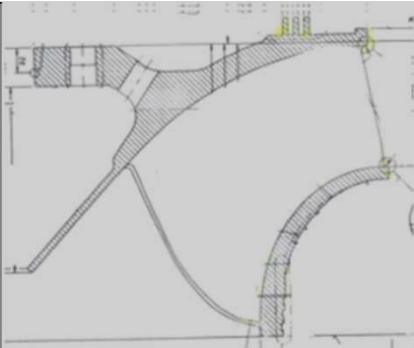
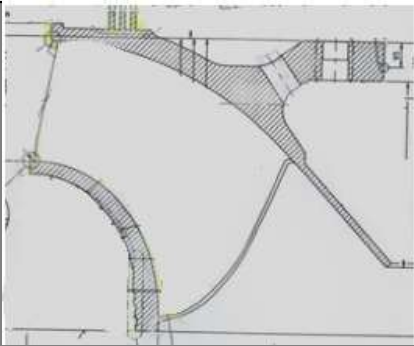
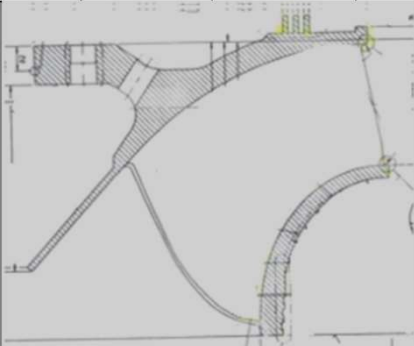
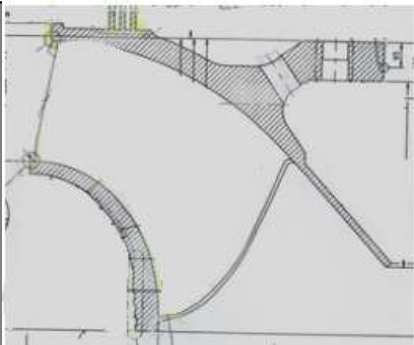
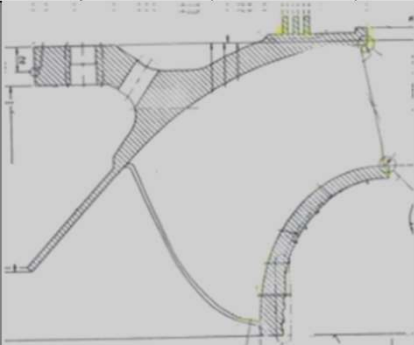
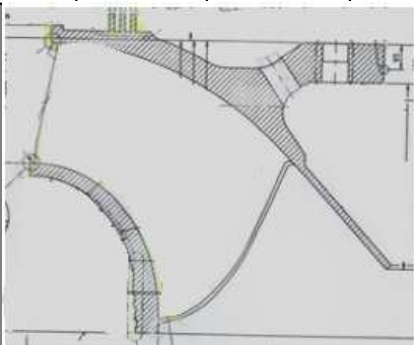

Sketches showing location, size and depth of the major erosion marks

Location	S.No.	Pressure Side				Suction Side			
		Size of erosion mark (sq.mm.)		Area (sq.mm.)	Approx. Depth of erosion mark (mm)	Size of erosion mark (sq.mm.)		Area (sq.mm.)	Approx. Depth of erosion mark (mm)
		Length	Width			Length	Width		
Blade#1									
	1	800	230	184000	15	240	230	55200	6
	2					450	150	67500	5
Blade#2									
	1	700	200	140000	11	300	200	60000	6
	2					500	220	110000	4
Blade#3									
	1	600	220	132000	13	300	220	66000	8
	2					420	360	151200	7

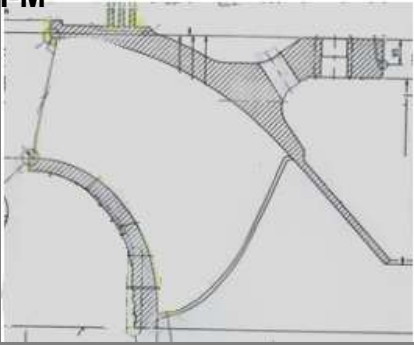
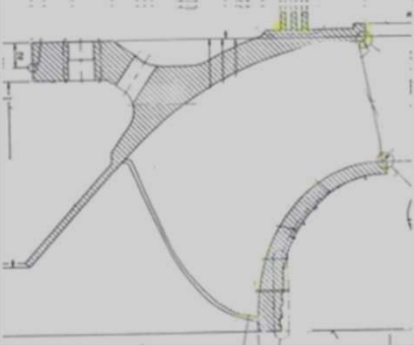
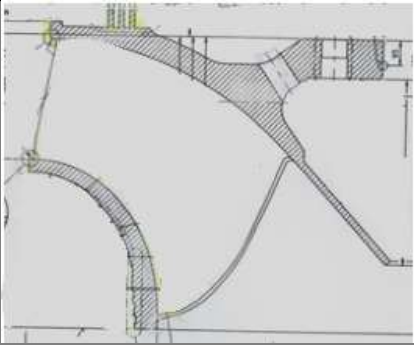
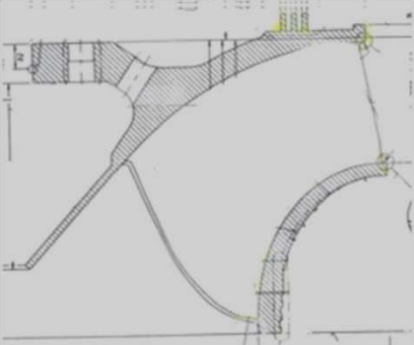
1021317/2024/O/e HOD-PH-M

7/2024/O/G HOB PH-M									
Blade#4									
	1	1000	200	200000	8	320	300	96000	3
	2					440	260	114400	4
Blade#5									
	1	850	190	161500	18	360	340	122400	5
	2					420	240	100800	3
Blade#6									
	1	1050	200	210000	9	360	270	97200	7
	2					290	240	69600	7
Blade#7									
	1	890	270	240300	11	320	300	96000	6
	2					345	260	89700	5

1021317/2024/O/e HOD-PH-M

7/2024/O/G HOB PH-M									
Blade#8									
	1	1100	230	253000	8	270	240	64800	5
	2					345	260	89700	5
Blade#9									
	1	900	260	234000	8	240	170	40800	6
	2					420	240	100800	5
Blade#10									
	1	800	270	216000	11	380	140	53200	6
	2					300	270	81000	5
Blade#11									
	1	900	260	234000	15	380	160	60800	6
	2					300	270	81000	5

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Blade#12									
	1	1050	250	262500	7	300	120	36000	5
	2					250	100	25000	5
Blade#13									
	1	750	240	180000	18	280	240	67200	7
	2					330	130	42900	6
Total Surface Area (A1)		2647300		sq.mm.		A2		2039200	sq.mm.

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7/2024/O/O/6 HOD PH M									
Circumference of Crown									
	Diameter			3336	mm				
	Damaged Height			70	mm				
	Av. Damaged Length (inlet)			10	mm				
	Approx. Surface Area (A3)			= 3.14 x 3336 x (70+10)		=	838003.2	sq.mm.	
Circumference of Skirt/Band									
	Diameter			3482	mm				
	Damaged Height			50	mm				
	Av. Damaged Length (inlet)			10	mm				
	Approx. Surface Area (A4)			= 3.14 x 3482 x (50+10)		=	656008.8	sq.mm.	
GRAND TOTAL OF DAMAGED SURFACE AREA TO BE REPAIRED (A1+A2+A3+A4)									
		2647300	+	2039200	+	838003.2	+	656008.8	
		=	6180512	sq.mm.					
		=	4.3	sq.m.					

NOTE: The above shown damaged area only indicates major erosions/pittings. There are a few sections on blade & other parts which contains minor pits / erosion marks. The above shown area for repairing is indicative only and the area to be repaired will be finalized at time of mapping of damaged area in the presence of NHPC representative (as per approved QAP & Scope of Work).

SURFACE AREA TO BE COATED		
TOTAL AREA TO BE COATED		in sq.m.
		13.60
		SAY
		13.60 sq.m.

NOTE: The area to be coated with HP-HVOF coating will be finalized at time of final machining inspection in the presence of NHPC representative. The location or value of area may vary.

Template matching report

2. The blades of Runner were checked with Runner blade templates for any distortion in the profile. No major distortion/deviation observed.

Note: Presently the Runner and Guide Vanes are lying at the Service Bay of Power House of CPS-II, Chamba (H.P.). The maximum possible information regarding extent of damage on runner is provided above, however in order to get the best assessment of work involved, you are requested to visit site for checking and inspection of runner before submitting bids.

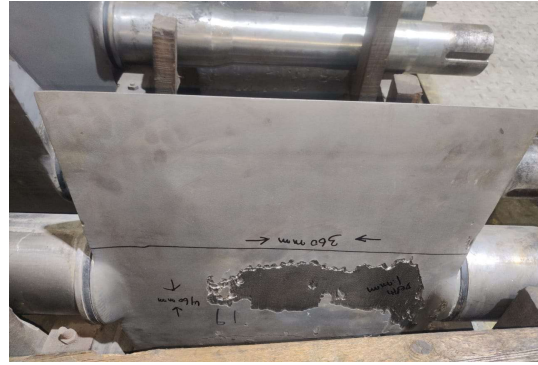
1021318/2024/O/A HOD-PH-M

Report for the assesment of extent of damage on Guide Vanes, Unit # 2

Photographs: Guide Vanes



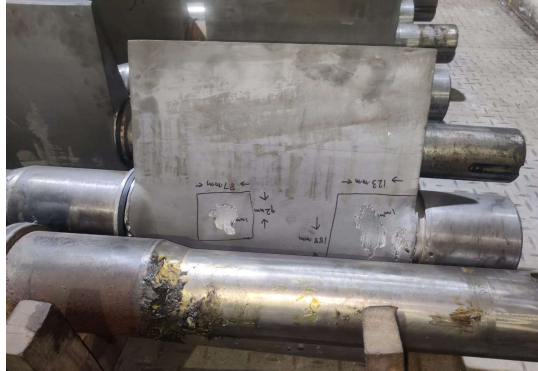
PIC-1



PIC-2



PIC-3



PIC-4



PIC-5



PIC-6



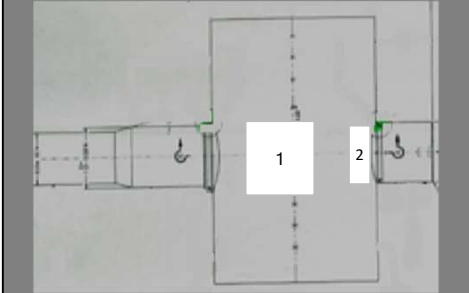
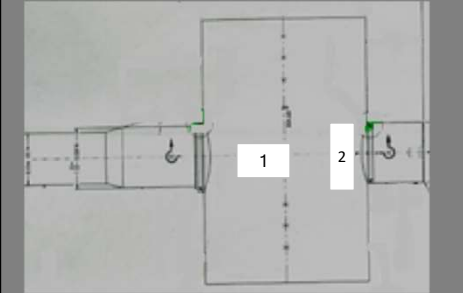
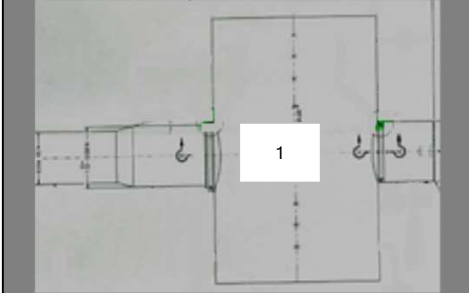
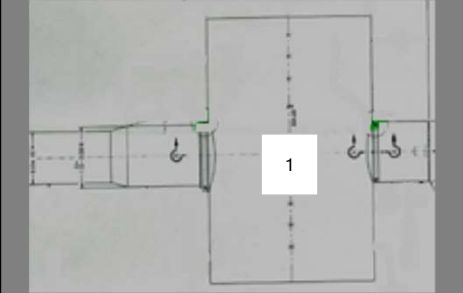
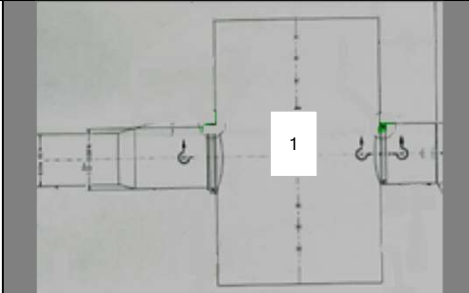
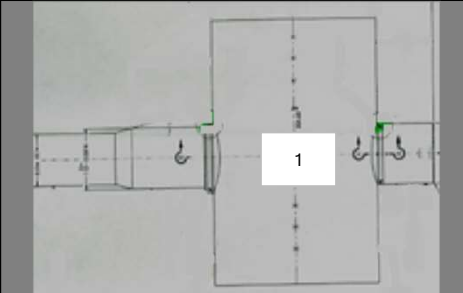
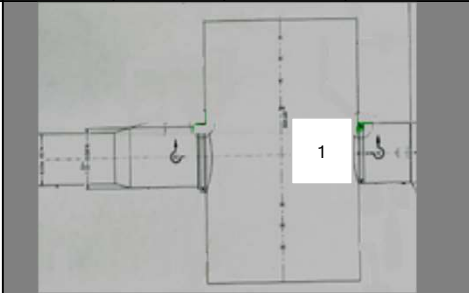
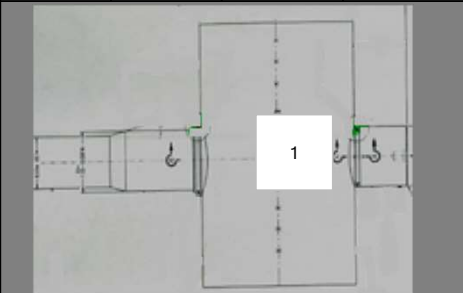
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1021318/2024/O/o HOD-PH-M

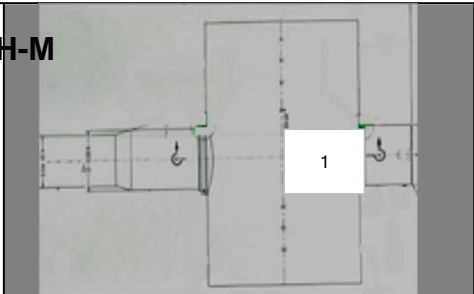
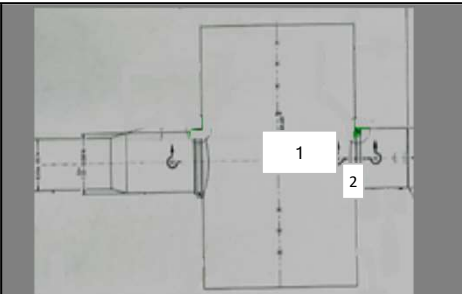
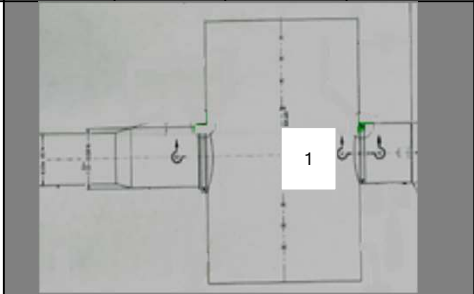
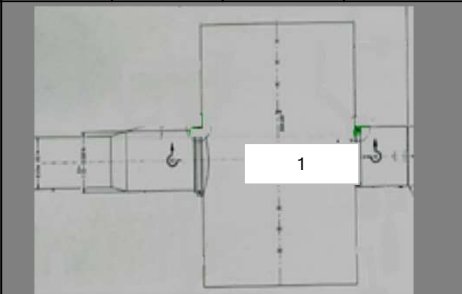
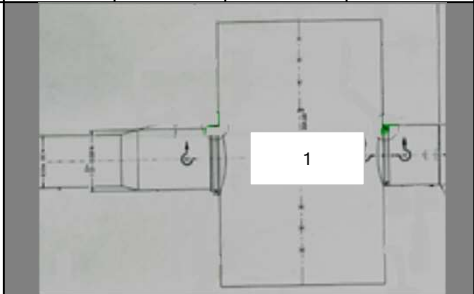
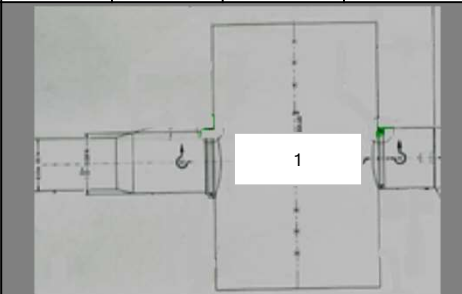
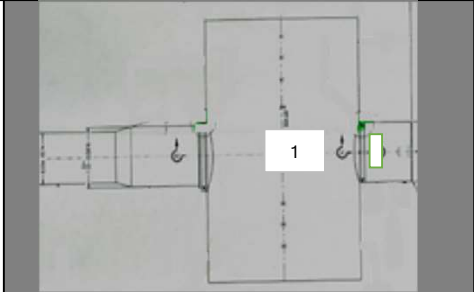
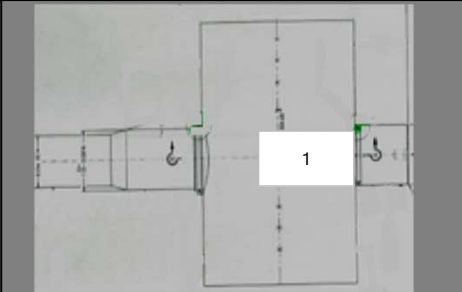
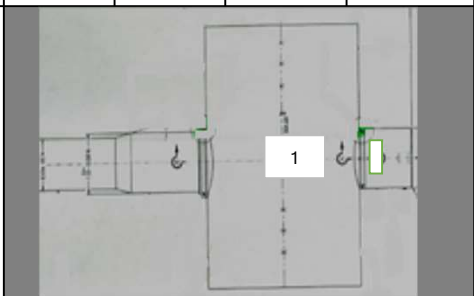
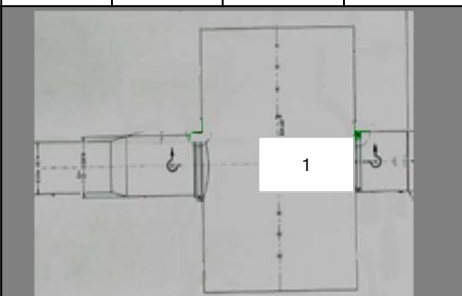
GUIDE VANES WEIGHT REPORT				
Item - Guide Vane No.	Identification code	Retrieved From Unit	Before Repair (weight in kgs)	Required After Repair (weight in kgs)
1	UG#3-1	Unit # 2	370.8	370 ± 3%
2	UG#3-2		371.2	
3	UG#3-3		369.8	
4	UG#3-4		373.2	
5	UG#3-5		373.4	
6	UG#3-6		375.2	
7	UG#3-7		375.2	
8	UG#3-8		372.4	
9	UG#3-9		375.6	
10	UG#3-10		374.2	
11	UG#3-11		375.4	
12	UG#3-12		375.4	
13	UG#3-13		378.8	
14	UG#3-14		372.4	
15	UG#3-15		373.4	
16	UG#3-16		370.6	
17	UG#3-17		372.4	
18	UG#3-18		370.6	
19	UG#3-19		371.6	
20	UG#3-20		374.2	

1021318/2024/O/o HOD-PH-M

Sketches showing location, size and depth of the major erosion marks

Location	S.No.	Suction Side				Suction Side			
		Size of erosion mark (sq.mm.)		Area (sq.mm.)	Approx. Depth of erosion mark (mm)	Size of erosion mark (sq.mm.)		Area (sq.mm.)	Approx. Depth of erosion mark (mm)
		Length	Width			Length	Width		
GV#1 & 3									
	1	460	380	174800	1	120	100	12000	1.5
	2	10	90	900	1.5	20	90	1800	2
GV#4 & 7									
	1	175	163	28525	3	260	290	75400	3
GV#8 & 11									
	1	45	78	3510	2	160	135	21600	1
GV#12 & 13									
	1	170	95	16150	1.5	450	360	162000	3

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24/O/o HOD-PH-M										
GV#14 & 15										
	1	465	450	209250	2	460	365	167900	2	
	2					10	25	250	1.5	
GV#16 & 17										
	1	250	50	12500	1	460	100	46000	1	
GV#19 & 20										
	1	460	360	165600	2	130	50	6500	3	
GV#5 & 6										
	1	170	65	11050	2	460	360	165600	3	
	2	10	20	200	3					
GV#9 & 10										
	1	140	120	16800	1.5	390	240	93600	3	
Total Surface Area (A1)		639285		sq.mm.		A2		617200		sq.mm.

1021318/2024/O/o HOD-PH-M

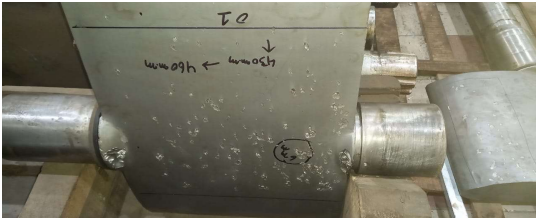
GRAND TOTAL OF DAMAGED SURFACE AREA TO BE REPAIRED (A1+A)									
		639285	+	617200					
		=	1256485	sq.mm.					
		=	1.256	sq.m.					

NOTE: The above shown damaged area only indicates major erosions/pittings. All the collars/grooves for cup-seals are damaged and need to be re-build. The above shown area for repairing is indicative only and the area to be repaired will be finalized at time of mapping of damaged area in the presence of NHPC representative (as per approved QAP & Scope of Work).

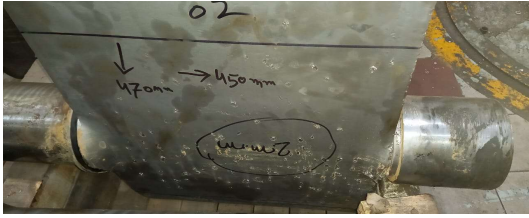
SURFACE AREA TO BE COATED		
S.No.	Area	Value
1	Guide Vane Suction Side (0.35 sq.m.for each guide vanes)	7
2	Guidevane Top and Bottom Surfaces (0.30 sq. m for each Guidevane)	6
		in sq.m
		13
TOTAL AREA TO BE COATED		SAY
		13 sq.m.

NOTE: The area to be coated with HP-HVOF coating will be finalized at time of final machining inspection in the presence of NHPC representative. The location or value of area may vary.

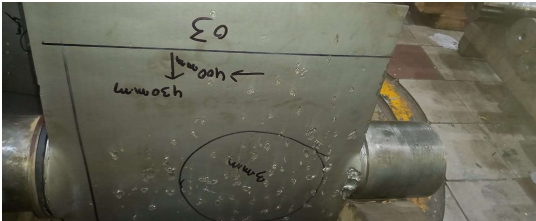
Note: Presently the Guide Vane set is lying at the Service Bay of Power House of CPS-II, Chamba (H.P.). The maximum possible information regarding extent of damage on Guide Vane set is provided above, however in order to get the best assessment of work involved, you are requested to visit site for checking and inspection of Guide Vane set before submitting the bid.



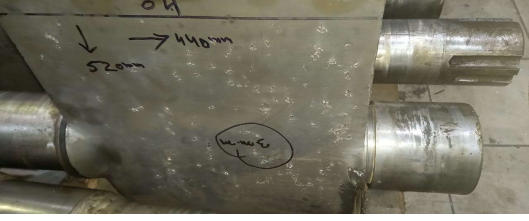
PIC-1



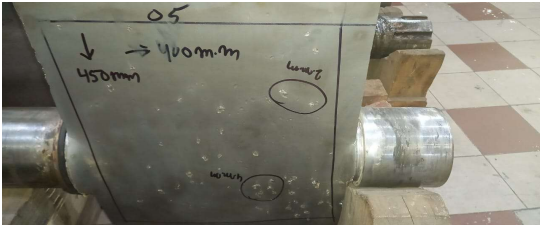
PIC-2



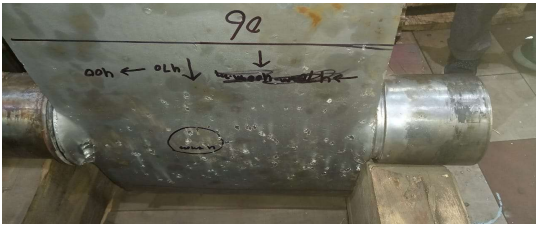
PIC-3



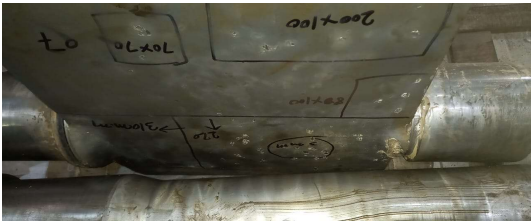
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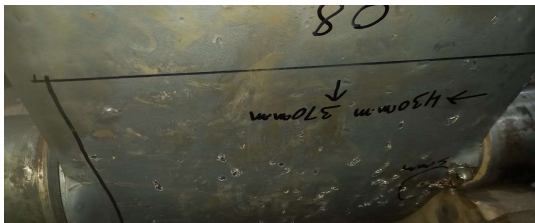
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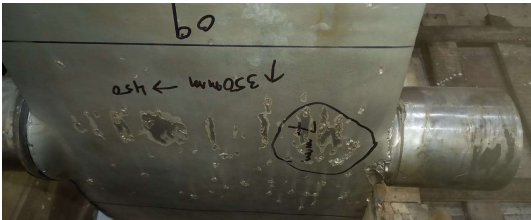
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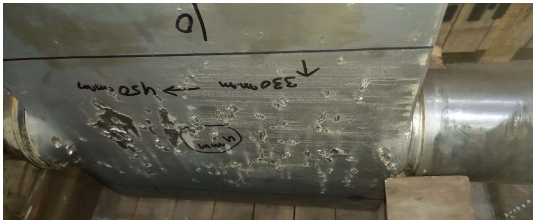
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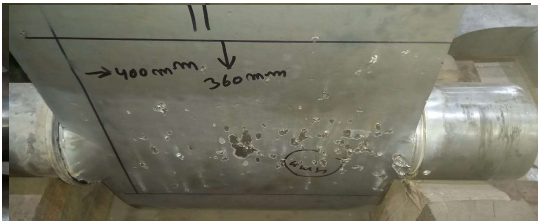
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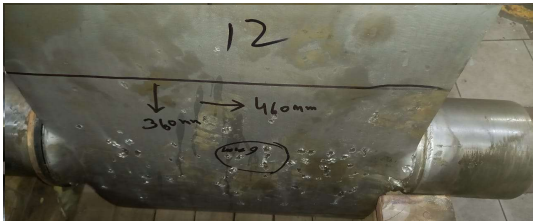
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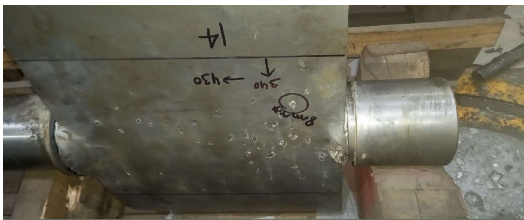
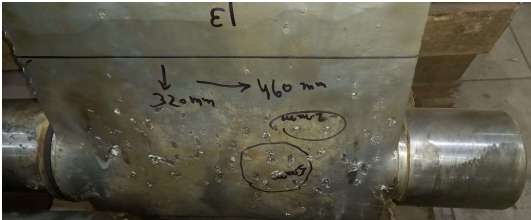
PIC-10



PIC-11



PIC-12

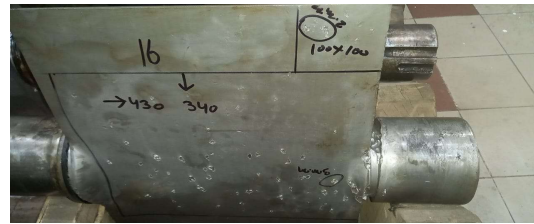


PIC-13

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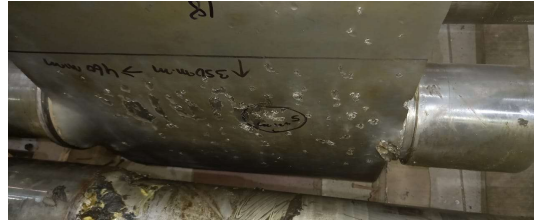
PIC-14



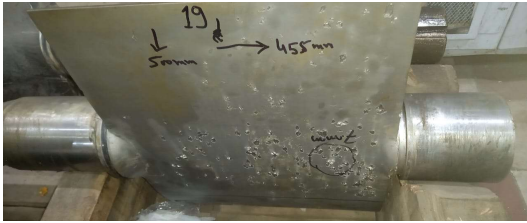
PIC-15



PIC-16



PIC-17



PIC-18



PIC-19

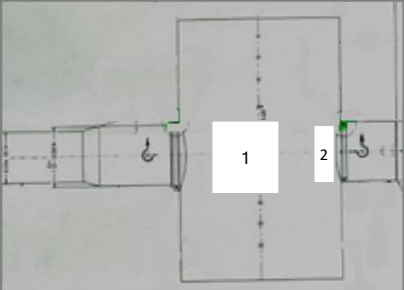
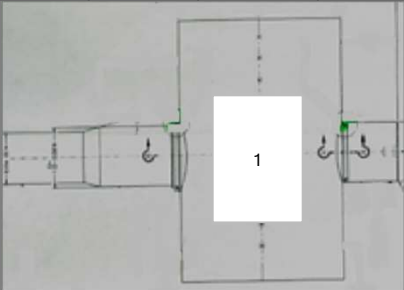
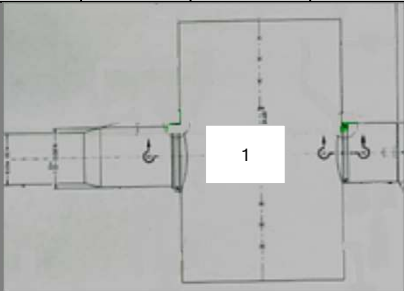
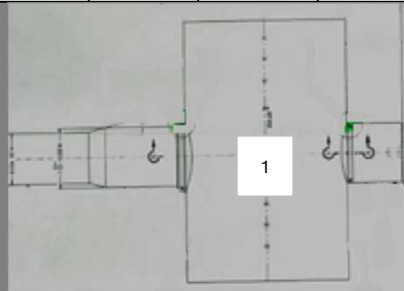
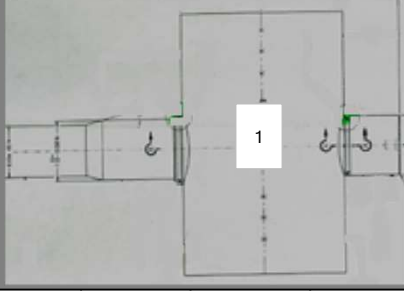
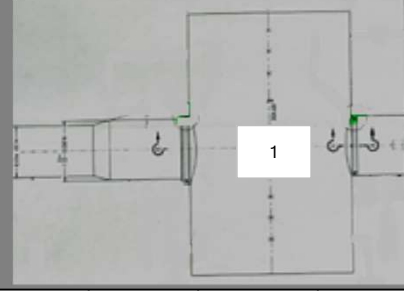
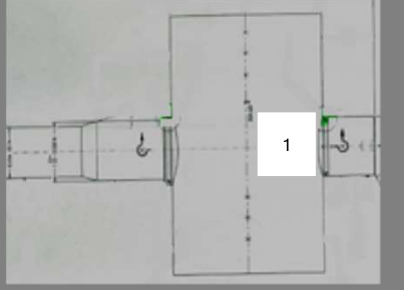
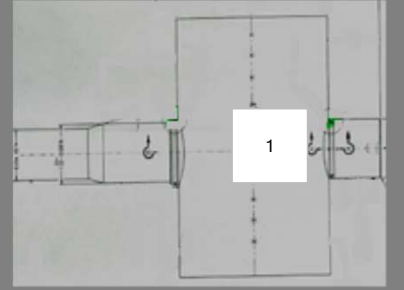
PIC-20

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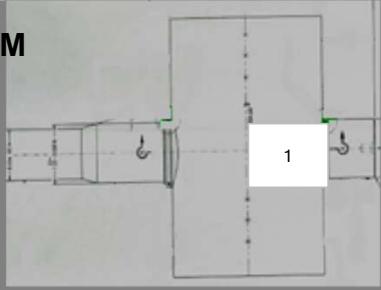
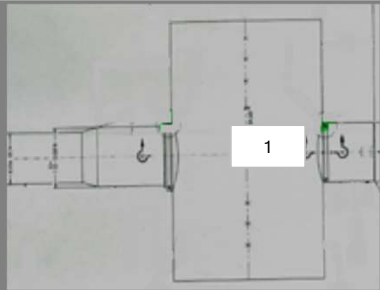
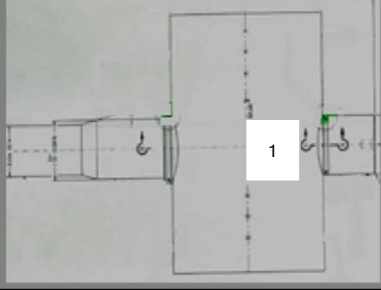
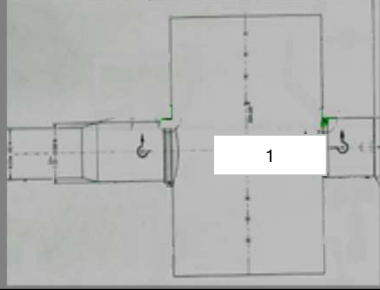
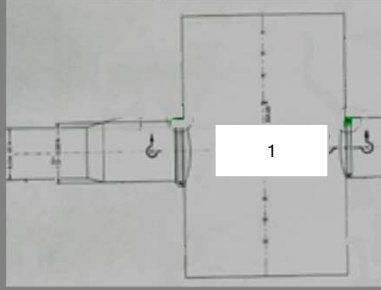
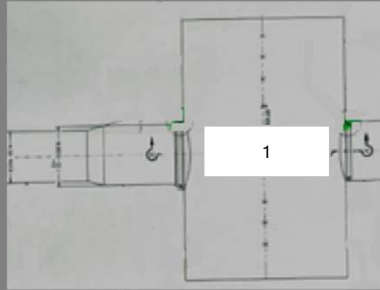
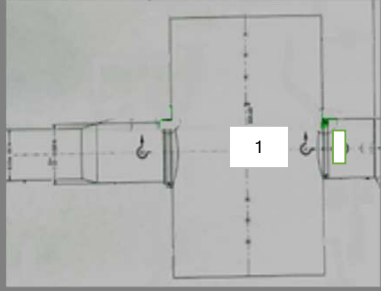
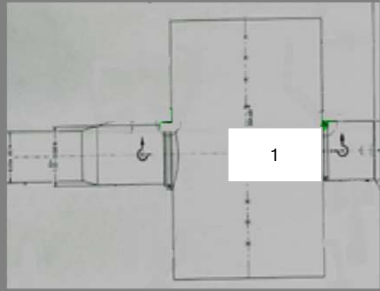
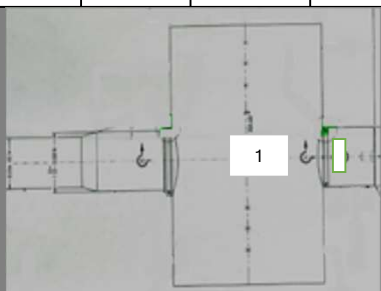
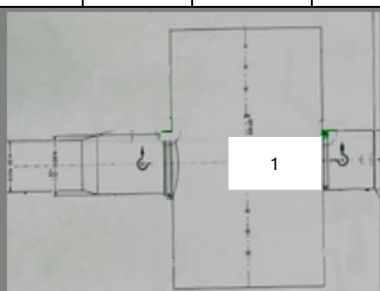
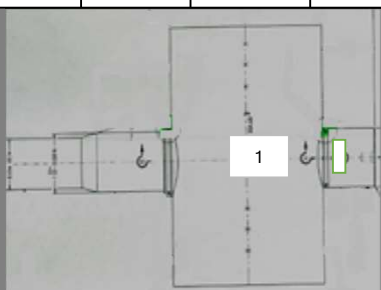
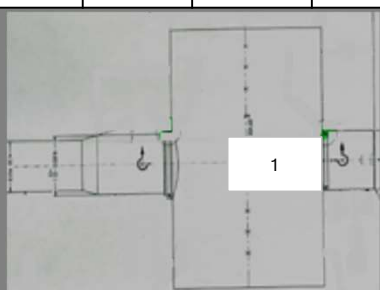
GUIDE VANES WEIGHT REPORT				
Item - Guide Vane No.	Identification code	Retrieved From Unit	Before Repair (weight in kgs)	Required After Repair (weight in kgs)
1	UG#1-1	Unit # 3	364	370 \pm 3%
2	UG#1-2		367.8	
3	UG#1-3		369.2	
4	UG#1-4		365.6	
5	UG#1-5		363.2	
6	UG#1-6		366.8	
7	UG#1-7		372	
8	UG#1-8		364.2	
9	UG#1-9		370.6	
10	UG#1-10		369.4	
11	UG#1-11		366	
12	UG#1-12		373.2	
13	UG#1-13		371.4	
14	UG#1-14		371.4	
15	UG#1-15		369.6	
16	UG#1-16		365.4	
17	UG#1-17		362.6	
18	UG#1-18		375	
19	UG#1-19		361.6	
20	UG#1-20		364.4	

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Sketches showing location, size and depth of the major erosion marks

Location	S.No.	Suction Side				Suction Side			
		Size of erosion mark (sq.mm.)		Area (sq.mm.)	Approx. Depth of erosion mark (mm)	Size of erosion mark (sq.mm.)		Area (sq.mm.)	Approx. Depth of erosion mark (mm)
		Length	Width			Length	Width		
GV#1 & 2									
	1	430	460	197800	6	450	470	211500	2
	2	6	6	36	1.5				
GV# 3 & 4									
	1	400	430	172000	3	440	520	228800	3
GV#5 & 6									
	1	400	450	180000	2	400	470	188000	4
GV#7 & 8									
	1	220	310	68200	3	430	370	159100	6
	2	70	70	4900	1				
	3	200	100	20000	3				

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GV#9 & 10									
	1	350	450	157500	3.5	330	450	148500	3
	2								
GV#11 & 12									
	1	400	360	144000	4	360	460	165600	6
GV#13 & 14									
	1	320	460	147200	2	340	430	146200	6
GV#15 & 16									
	1	430	350	150500	4	430	340	146200	3
	2	10	20	200	3	100	100	10000	2
GV#17 & 18									
	1	370	390	144300	6	350	460	161000	3
GV#19& 20									

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	1	500	455	227500	0.7	380	350	133000	3
	1614136.00				sq.mm.	A2	1697900.00		sq.mm.

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GRAND TOTAL OF DAMAGED SURFACE AREA TO BE REPAIRED (A1+A)								
	1614136.00	+	1697900					
	=	3312036	sq.mm.					
	=	3.312	sq.m.					

NOTE: The above shown damaged area only indicates major erosions/pittings. All the collars/grooves for cup-seals are damaged and need to be re-build. The above shown area for repairing is indicative only and the area to be repaired will be finalized at time of mapping of damaged area in the presence of NHPC representative (as per approved QAP & Scope of Work).

SURFACE AREA TO BE COATED		
S.No.	Area	Value
1	Guide Vane Suction Side (0.35 sq.m.for each guide vanes)	7
2	Guidevane Top and Bottom Surfaces (0.30 sq. m for each Guidevane)	6
TOTAL AREA TO BE COATED		13
		in sq.m
		SAY
		13 sq.m.

NOTE: The area to be coated with HP-HVOF coating will be finalized at time of final machining inspection in the presence of NHPC representative. The location or value of area may vary.

Note: Presently the Guide Vane set is lying at the Service Bay of Power House of CPS-II, Chamba (H.P.). The maximum possible information regarding extent of damage on Guide Vane set is provided above, however in order to get the best assessment of work involved, you are requested to visit site for checking and inspection of Guide Vane set before submitting the bid.