

First Time



D.L. RICCI CORP. PWHT JOB ANALYSIS SHEET

CUSTOMER: Major Tool
 JOBSITE: Indianapolis Indiana
 DATE: 1-31-06 CUSTOMER CONTACT: Doug McCorkle
 TECHNICIAN: Eric, Herb, Bret, Joe, Seth, Kevin PROCEDURE/MATERIAL: Inconel/stainless steel
 WORK ORDER#: 65678/1.0 JOB LOCATION: Major tool shop
 SYSTEM #: _____ RECORDER S/N#: R-91, R-088, R-074, R-079
 I.S.O. LINE #: _____ R-070, R-093, R-037, R-092, R-94, R-93, R-95
 SPOOL #: _____
 FIELD WELD #: _____
 CHART #: 11 TOTAL WELDS: _____ TOTAL TC'S: 101

WORK DESCRIPTION: run a bake at 707° on the vessel and 275°-311° on the parts.

parts
 HEAT CYCLE: 300° at 50°/per 120 min. at 300° held 21 hours
70 min. at 707° held 24 hours.
 AMBIENT TO 707° F AT 50°/hr F/HR, ABOVE _____ F AT _____ F/HR
 HOLD FOR _____ HRS AT _____ F/HR, +/- _____ F, COOL TO _____ F AT _____ F/HR.
 COOL TO AMBIENT UNDER INSULATION Y/N _____

PWHT CYCLE INFORMATION:

started at Ambient and ramped up 50° every 70 min on the vessel till 707
started at Ambient and slowly ramped up on the parts 50° every
2 hours or so.
When the vessel got to 700° we held it the first time 24 hours First Time
when the parts got to 300° we held them 21 hours the First Time
when hold time was complete we ramp Down on the vessel 50° per ~~hour~~ 70 min
till about 500° and then the parts fell out of salt and then we
 * TO INCLUDE ALL INFORMATION RELEVANT TO PWHT CYCLE*

Neal Jacobs 2/11/06
 TECHNICIAN DATE

CUSTOMER ACCEPTANCE*: _____ DATE: _____

* SIGNATURE ACCEPTS ABOVE HEAT CYCLE PROCEDURE

K Drive: Job Sheet- Excel File

start to ramp the parts Down 50° per ~~hour~~ 70 min to 200°
and at 500° we changed the ramp rate on the vessel to 90° per hour
and target temp to 100° per ~~hour~~ step and we would hold each step till
we were within 10° Top to Bottom



D.L. RICCI CORP. TIME TEMPERATURE TABULATIONS

CUSTOMER: _____

DATE: 2-6

CUSTOMER CONTACT: _____

TECHNICIAN: _____

PROCEDURE/MATERIAL: _____

WORK ORDER#: _____

JOB LOCATION: _____

SYSTEM #: _____

RECORDER SERIAL #: AK009A092

I.S.O. LINE #: _____

SPOOL #: _____

FIELD WELD #: _____

CHART #: 8

TOTAL WELDS: _____

TOTAL TC'S: 12

TIME/TC	1	2	3	4	5	6	7	8	9	10	11	12
14:13	20	21	22	20	19	19	20	21	20	18	20	19
14:43	134	131	130	127	128	127	134	128	131	123	158	146
15:13	149	148	141	143	149	144	141	142	151	124	158	146
15:43	143	142	137	140	149	142	140	143	149	122	156	142
16:13	144	151	144	140	147	143	138	146	145	125	154	138
16:43	168	168	166	167	170	168	169	169	172	154	183	167
17:13	171	174	176	174	171	175	172	172	187	163	184	171
17:43	170	172	174	172	171	172	170	170	180	168	178	169
18:13	171	172	173	172	171	172	170	171	170	168	173	169
18:43	171	173	173	172	171	172	170	171	177	168	169	165
19:13	172	172	174	174	171	172	170	171	177	164	170	178
19:43	187	186	189	186	182	183	180	178	183	176	175	179
20:13	203	203	206	202	202	203	206	202	207	201	200	203
20:43	225	225	225	225	224	225	226	224	224	214	222	224
21:13	222	222	223	222	221	222	220	221	231	219	226	218
21:43	247	247	248	247	247	248	246	246	257	244	252	245
22:13	272	272	274	272	272	273	270	271	279	269	273	26
22:43	287	287	287	286	289	287	287	288	297	287	240	288
23:13	313	313	312	311	313	314	314	313	321	308	312	316
23:43	321	321	323	321	321	322	319	320	331	318	323	318
00:13	338	338	341	337	337	338	335	336	347	334	336	336
00:43	365	365	368	362	361	364	360	360	371	357	359	359
1:13	383	383	386	382	383	387	383	382	390	379	381	381
1:43	409	411	411	408	409	410	407	407	415	403	405	405
2:13	425	425	425	423	423	422	419	421	429	419	423	419
2:43	449	450	450	447	448	445	443	445	454	443	447	444
3:13	477	475	475	472	471	472	467	469	475	468	471	466
3:43	490	492	492	486	487	488	489	488	494	486	487	488
4:13	515	518	518	513	513	514	512	512	520	511	513	512

* Time/Temperature Log shall be used to record temperatures above 800 Degrees F (or per applicable procedure) every hour during the heating and cooling cycles and every one-half hour during PWHT cycle.

K Drive: Time Temp Log

open



D.L. RICCI CORP. TIME TEMPERATURE TABULATIONS

CUSTOMER: _____

DATE: 2-7

CUSTOMER CONTACT: _____

TECHNICIAN: _____

PROCEDURE/MATERIAL: _____

WORK ORDER#: _____

JOB LOCATION: _____

SYSTEM #: _____

RECORDER SERIAL #: AH009A092

I.S.O. LINE #: _____

SPOOL #: _____

FIELD WELD #: _____

CHART #: 8

TOTAL WELDS: _____

TOTAL TC'S: 12

TIME/TC	1	2	3	4	5	6	7	8	9	10	11	12
4:43	P	533	530	530	530	531	527	528	533	528	529	527
5:13	0	557	559	555	556	556	551	552	558	551	553	551
5:43	B	572	574	570	572	572	570	570	574	566	570	564
6:13	T	596	600	593	596	596	591	594	596	592	593	591
6:43		622	624	618	620	621	616	618	621	616	617	616
7:13	15 E	640	638	638	637	638	638	638	640	636	637	637
7:43		665	666	664	662	664	663	662	664	661	663	662
8:13		728	725	720	716	710	673	674	672	673	672	674
8:43	ADD60	707	703	702	701	701	699	700	698	698	698	699
9:13		702	703	701	701	701	699	701	699	698	699	700
9:43		702	704	702	701	702	700	701	700	699	699	700
10:13	271	707	709	705	706	706	702	704	702	703	702	704
10:43	283	709	710	710	708	707	707	708	706	706	706	707
11:13	301	710	711	709	709	709	707	708	706	706	707	707
11:43	300	707	711	714	709	707	707	708	707	706	707	707
12:13	300	710	711	710	709	709	707	708	707	705	707	707
12:43	300	710	711	710	709	709	707	708	706	706	707	707
13:13	300	710	711	710	709	709	707	703	707	705	707	708
13:43	300	710	711	710	709	710	707	708	707	706	707	707
14:13	300	710	711	709	709	709	707	708	707	706	707	707
14:43	300	708	711	710	709	709	707	708	707	706	707	707
15:13	300	710	711	710	709	710	707	708	707	706	707	707
15:43	300	710	711	710	709	710	707	708	707	706	707	707
16:13	300	710	711	710	709	710	707	708	707	706	707	707
16:43	300	710	711	710	709	709	707	708	706	706	707	707
17:13	300	710	711	710	709	710	707	708	707	706	707	707
17:43	300	710	711	710	709	710	707	708	707	706	706	707
18:13	300	710	711	710	709	710	707	708	707	706	707	707
18:43	300	710	711	710	710	710	707	708	707	706	707	707

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=PORT



D.L. RICCI CORP. TIME TEMPERATURE TABULATIONS

CUSTOMER: _____

DATE: 2-8

CUSTOMER CONTACT: _____

TECHNICIAN: _____

PROCEDURE/MATERIAL: _____

WORK ORDER#: _____

JOB LOCATION: _____

SYSTEM #: _____

RECORDER SERIAL #: AH009A092

I.S.O. LINE #: _____

SPOOL #: _____

FIELD WELD #: _____

CHART #: 8

TOTAL WELDS: _____

TOTAL TC'S: 12

TIME/TC	1	2	3	4	5	6	7	8	9	10	11	12
19:13	300	710	711	710	709	710	707	709	707	706	707	707
19:43	301	710	711	710	709	710	707	708	707	706	707	707
20:13	300	710	712	710	709	709	707	708	707	706	707	707
20:43	300	710	711	710	709	710	707	708	707	706	707	707
21:42	300	710	711	709	709	710	707	708	707	706	707	707
22:42	300	710	711	710	709	710	707	708	707	706	707	707
23:42	300	710	711	710	709	710	707	708	707	706	707	707
00:42	300	710	711	710	709	710	707	708	707	706	707	707
1:42	304	710	711	710	708	709	707	708	707	706	707	707
2:42	301	710	712	710	709	710	707	708	707	706	707	707
3:42	300	710	712	710	709	710	707	708	707	706	707	707
4:42	301	710	712	710	709	710	707	709	707	706	707	707
5:42	300	710	712	710	709	710	707	708	707	706	707	707
6:42	300	710	711	710	709	709	707	708	707	706	707	707
7:42	300	710	711	709	709	710	707	708	707	706	707	707
8:42	300	700	702	697	699	700	699	700	702	699	699	698
9:12	300	676	671	674	674	675	675	675	675	674	675	674
9:42	300	651	653	650	650	651	650	651	651	649	650	650
10:12	300	628	630	630	629	627	625	626	627	625	625	627
10:42	300	604	606	605	605	602	600	601	603	600	601	600
11:12	300	583	582	584	586	591	589	583	588	588	581	579
12:12	300	502	503	500	499	499	498	501	515	503	502	498
13:12	300	460	459	457	483	461	461	462	473	464	467	455
14:12	299	403	404	402	401	402	402	407	415	405	405	403
15:12	276	381	380	371	381	384	386	387	391	379	385	384
16:12	251	352	354	352	351	351	351	351	362	348	351	345
17:12	215	345	345	355	342	346	346	347	355	343	343	345
18:12	181	302	303	302	301	301	302	310	314	301	311	295
19:12	157	301	302	300	298	300	298	299	309	297	298	299

V
END
7:30

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=PORT



D.L. RICCI CORP. TIME TEMPERATURE TABULATIONS

CUSTOMER: _____

DATE: 2-9

CUSTOMER CONTACT: _____

TECHNICIAN: _____

PROCEDURE/MATERIAL: _____

WORK ORDER#: _____

JOB LOCATION: _____

SYSTEM #: _____

RECORDER SERIAL #: AH009A092

I.S.O. LINE #: _____

SPOOL #: _____

FIELD WELD #: _____

CHART #: 8

TOTAL WELDS: _____

TOTAL TC'S: 12

TIME/TC	1	2	3	4	5	6	7	8	9	10	11	12
20:12	139	282	284	268	278	281	280	281	293	278	282	281
21:12	123	259	260	252	261	260	262	266	270	256	263	267
22:12	114	244	244	232	237	244	245	245	255	241	247	244
23:12	106	202	203	202	201	201	203	212	212	202	211	202
00:12	100	201	207	201	200	201	201	205	210	198	203	200
1:27	94	202	203	203	201	201	200	200	210	198	200	199
2:27	128	242	245	246	240	242	241	241	251	240	243	240
2:57	178	283	283	264	265	267	265	261	267	254	260	258
3:27	166	288	293	284	286	287	284	285	292	279	285	281
4:27	175	324	328	321	319	320	313	321	330	318	318	311
5:27	230	362	364	363	352	363	364	363	374	360	366	366
6:27	275	407	408	405	404	402	403	404	412	403	405	402
7:27	275	453	454	453	452	453	451	452	457	449	452	451
8:27	286	496	498	495	494	494	492	493	497	492	497	495
9:27	300	540	544	538	537	539	538	537	535	535	538	535
10:27	300	580	582	576	578	577	575	577	580	574	578	576
11:27	300	619	623	621	616	620	619	618	616	620	618	617
12:27	300	660	662	660	659	662	658	659	662	659	659	657
13:27	300	703	703	701	701	702	699	701	694	699	699	698
14:27	302	710	712	710	704	710	707	708	706	707	708	708
15:27	302	711	712	711	710	710	707	707	707	706	707	707
16:27	302	711	712	711	711	710	707	708	707	707	708	707
17:27	302	711	712	711	710	710	707	710	707	706	710	708
18:27	302	711	712	711	710	710	707	708	707	708	708	708
19:27	302	710	712	711	711	710	707	708	707	706	708	708
20:27	302	711	712	711	710	710	707	708	707	706	708	708
21:27	302	711	712	710	710	710	707	708	707	707	707	708
22:27	302	711	712	711	710	708	707	708	708	707	708	708
23:27	302	711	712	711	710	710	707	708	707	707	708	708

Start
up
3:45
P.M.
START
SOAK

* Time/Temperature Log shall be used to record temperatures above 800 Degrees F (or per applicable procedure) every hour during the heating and cooling cycles and every one-half hour during PWHT cycle.



D.L. RICCI CORP. TIME TEMPERATURE TABULATIONS

CUSTOMER: _____
 DATE: 2-10 CUSTOMER CONTACT: _____
 TECHNICIAN: _____ PROCEDURE/MATERIAL: _____
 WORK ORDER#: _____ JOB LOCATION: _____
 SYSTEM #: _____ RECORDER SERIAL #: _____
 I.S.O. LINE #: _____
 SPOOL #: _____
 FIELD WELD #: _____
 CHART #: 8 TOTAL WELDS: _____ TOTAL TC'S: 12

10
1450
1450

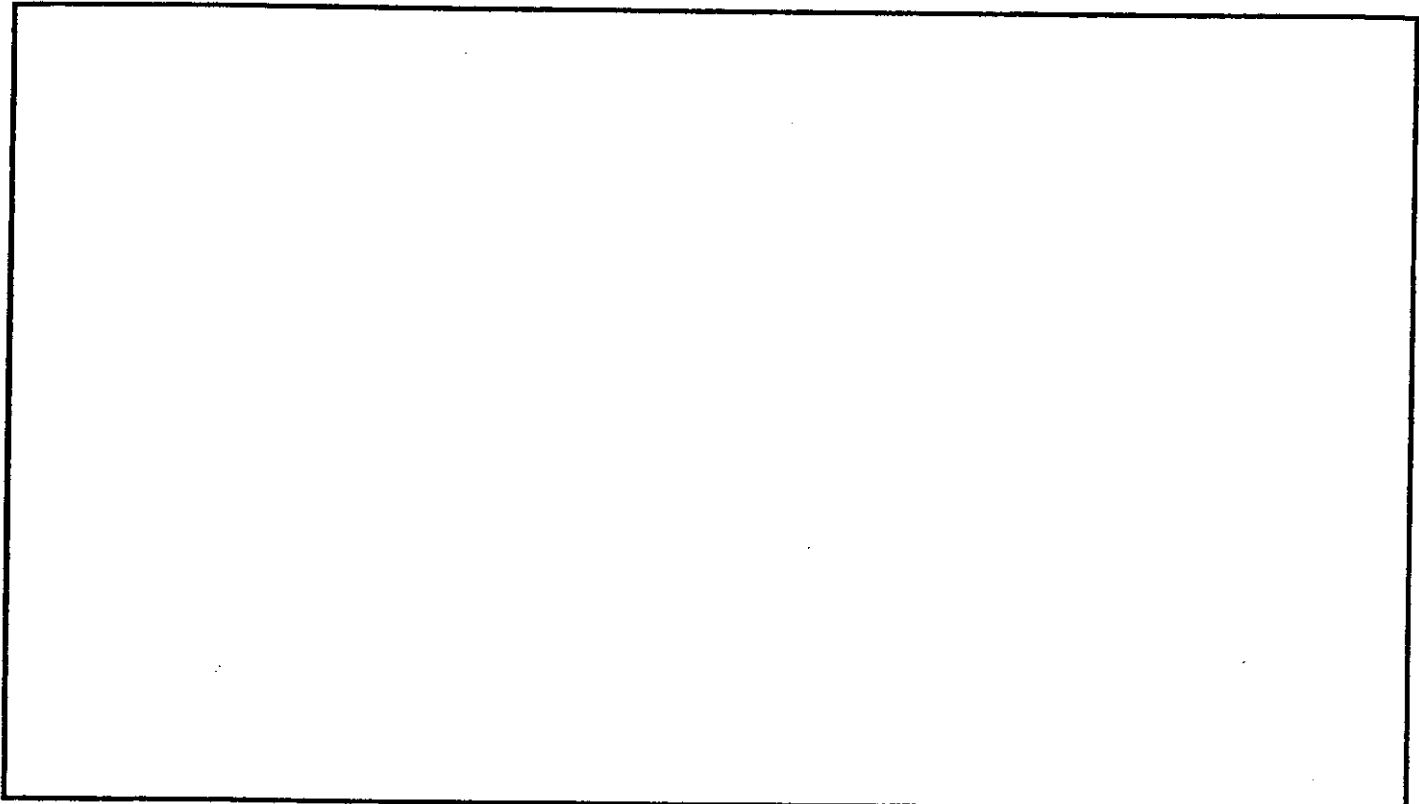
TIME/TC	1	2	3	4	5	6	7	8	9	10	11	12
00:27	302	711	712	710	710	711	707	708	709	706	709	707
1:27	302	711	712	710	708	711	707	708	707	707	708	708
2:27	302	711	712	711	710	710	707	708	707	707	708	708
3:27	302	711	712	711	709	710	707	708	707	706	708	708
4:27	302	711	712	711	710	711	707	708	707	707	707	707
5:27	302	710	712	711	710	711	707	707	708	706	709	705
6:27	302	711	712	711	710	710	707	708	708	706	708	708
7:27	302	711	712	711	710	711	707	708	708	673	675	675
8:27	302	678	679	679	679	679	674	675	675	678	678	678
9:27	302	631	633	628	629	629	628	630	629	628	628	628
10:27	303	583	584	581	577	586	584	585	591	581	591	583
11:27	282	562	564	560	560	560	497	503	518	505	504	497
12:27	250	456	455	452	451	461	463	464	475	463	468	460
13:27	227	403	464	402	402	404	401	409	418	405	405	403
14:27	200	386	385	372	374	388	391	390	397	383	391	387
15:27	173	320	321	302	301	322	334	342	327	321	342	325
16:27	152	289	289	278	278	291	290	302	294	290	300	281
17:27	136	247	246	222	220	244	256	265	247	245	264	248
18:27	123	213	213	195	195	214	228	231	210	210	233	221
19:27	117	188	188	175	166	188	204	203	184	184	206	200
19:44	111	181	182	170	159	181	198	196	178	128	194	194

* Time/Temperature Log shall be used to record temperatures above 800 Degrees F (or per applicable procedure) every hour during the heating and cooling cycles and every one-half hour during PWHT cycle.



D.L. RICCI CORP.
WELD AND THERMOCOUPLE IDENTIFICATION

DATE: 1-31-06 CUSTOMER CONTACT: Doug McCorkle
 TECHNICIAN: Eric, Herb, Brad, Joe, Seth, Kevin PROCEDURE/MATERIAL: Inconel / Stainless Steel
 WORK ORDER#: _____ JOB LOCATION: Major Tool shop
 SYSTEM #: _____ RECORDER S/N#: R-91, RC-088, RC-074, RC-079
 I.S.O. LINE #: _____ RC-070, RC-093, RC-037, RC-092, R-94, R-93, R-95
 SPOOL #: _____
 FIELD WELD #: _____
 CHART #: 11 Recorders TOTAL WELDS: _____ TOTAL TC'S: 101



WELD IDENTIFICATION AND THERMOCOUPLE LAYOUT
 THIS I.S.O. DRAWING IS COMPLETED BY THE PWHT TECHNICIAN

Herb [Signature] 2-11-06
 TECHNICIAN DATE



PWHT QUALITY CONTROL SHEET

CUSTOMER Major Tool W/O# _____

DATE: 2-11-06

1. Customer has given specific direction to D.L. Ricci, as to which welds need PWHT. Heat Treating Documentation packet has been given to the technician. The technician as reviewed the procedure.
Herb Spade
Technician
2. Drawings of each spool piece have been completed. Each drawing shows the spool piece number and describes each weld on the spool.
Herb Spade
Technician
3. Welds are wrapped and troubleshooting is complete. All zones are working properly. Technician has reviewed procedure (ramp rate, soak temperature, soak time).
Herb Spade
Technician
4. Welds are at soak temperature. Technician has reviewed chart (checking ramp rate up to soak).
Herb Spade
Technician
5. When soak is complete, technician has reviewed chart, checked soak time/temperature and reviewed ramp rate to completion.
Herb Spade
Technician
6. PWHT is complete. Technician has reviewed chart and everything is correct. (Do not unwrap welds until this stage is signed off)
Herb Spade
Technician
7. Unwrap welds. Take hardness test if required and record results.

Technician



D.L. RICCI CORP.
 5001 Moundview Drive
 Red Wing, Minnesota 55066
 Phone: 651/388-8661 Fax 651/388-0002

CERTIFICATE OF CALIBRATION

MODEL: CHINO	SERIAL NO: AH009A092
THERMOCOUPLE TYPE: K	RANGE: 0 - 2000 F.
CALIBRATION DATE: 10-14-05	DUE DATE: 4-14-06

TEST EQUIPMENT USED: THERMO-ELECTRIC E-2642	
MANUFACTURER: Thermo-Electric	CALIBRATION DATE: 8-16-05
MODEL NO: E-2642	ACCURACY: +/- 1 F
SERIAL NO: 0008032	

AMBIENT TEMP:

HUMIDITY:

ZONE: 1

INPUT	AS FOUND	AS LEFT	ACCURACY
200	199	200	+/-10 DEG F
400	400	400	+/-10 DEG F
600	601	600	+/-10 DEG F
800	800	800	+/-10 DEG F
1000	1000	1000	+/-10 DEG F
1200	1200	1200	+/-10 DEG F
1400	1400	1400	+/-10 DEG F
1600	1600	1600	+/-10 DEG F
1800	1800	1800	+/-10 DEG F
2000	1999	2000	+/-10 DEG F

THIS INSTRUMENT HAS BEEN CALIBRATED WITHIN MANUFACTURERS SPECIFICATION.
 THIS CALIBRATION IS TRACEABLE TO THE N.I.S.T.
 WE GUARANTEE THAT THIS PRODUCT HAS PASSED THROUGH E.H.S. STANDARD
 TESTING AND SATISFIES ALL SPECIFICATIONS

CALIBRATED BY: Michael Staehlin
 SIGNATURE: Michael W. Staehlin

PREHEAT AND STRESS RELIEVING EQUIPMENT

2nd Time



D.L. RICCI CORP. PWHT JOB ANALYSIS SHEET

CUSTOMER: Major Tool
 JOBSITE: Indianapolis Indiana
 DATE: 2-9-06 CUSTOMER CONTACT: Dana McCorkle
 TECHNICIAN: Eric, Herb, Bret, Joe, Seth, Kevin PROCEDURE/MATERIAL: Inconel/stainless steel
 WORK ORDER#: _____ JOB LOCATION: Major Tool Shop
 SYSTEM #: _____ RECORDER S/N#: R-91, RC-088, 074, 079, 070
 I.S.O. LINE #: _____ RC-093, RC037, RC-092, R-94, R-83, R-9
 SPOOL #: _____
 FIELD WELD #: _____
 CHART #: 11 charts TOTAL WELDS: _____ TOTAL TC'S: 101

WORK DESCRIPTION: When Temps were all lower than 212° we ^{started} ~~started~~ ramping up the vessel and parts till we got the ports back up to 300° & vessel back up to 707° and then held parts at Temp for 21 hours & The vessel for 18 hours so the both had a total of 42 hours of soak

vessel Parts from 200° to 300° at 50°/per 120 min; then Held 21 hours
 HEAT CYCLE From 200° to 707° at 50°/per 70 min Then Held 18 hours.
 AMBIENT TO _____ F AT _____ F/HR, ABOVE _____ F AT _____ F/HR
 HOLD FOR _____ HRS AT _____ F/HR, +/- _____ F, COOL TO _____ F AT _____ F/HR.
 COOL TO AMBIENT UNDER INSULATION Y/N _____.

PWHT CYCLE INFORMATION:

When hold time was complete we ramped down on the vessel at 50° per hour till 500° to ~~to~~ keep parts in soak for 3 extra hours so we would have 42 hours on both parts and vessel. after we were at 500° we set the ramp to 90° per hour and the target temp down 100° and held at each target temp till even and then set Target temp 100° less until we were and 200° Then we shut off reaches and let cool.

* TO INCLUDE ALL INFORMATION RELEVANT TO PWHT CYCLE*

Herb Spedon 2/11/06
 TECHNICIAN DATE

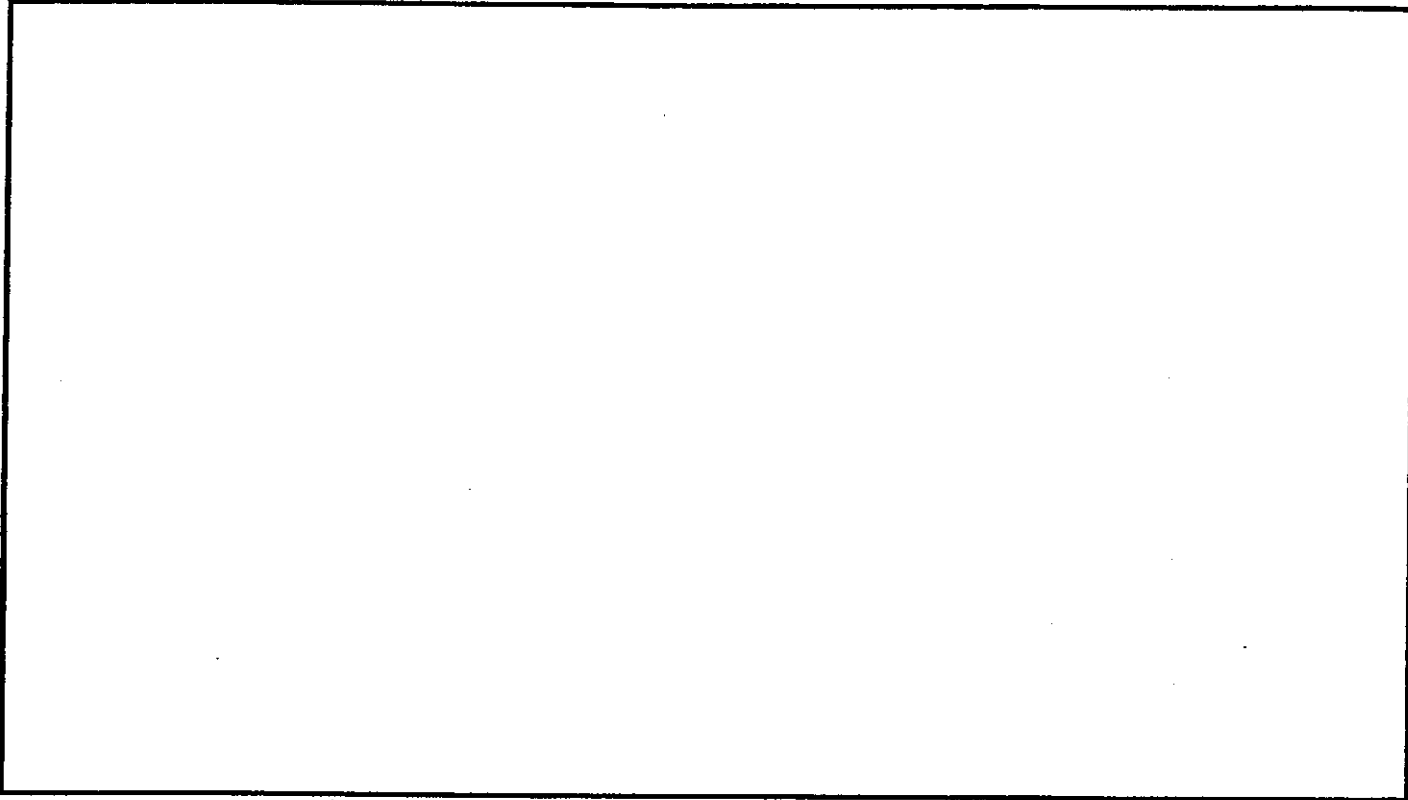
CUSTOMER ACCEPTANCE*: [Signature]
 * SIGNATURE ACCEPTS ABOVE HEAT CYCLE PROCEDURE

DATE: 11 Feb 2006



D.L. RICCI CORP.
WELD AND THERMOCOUPLE IDENTIFICATION

DATE: 2-9-06 CUSTOMER CONTACT: Doug McCorkle
 TECHNICIAN: Eric, Herb, Bret, Joe, Seth, Kevin PROCEDURE/MATERIAL: Inconel/stainless steel
 WORK ORDER#: _____ JOB LOCATION: _____
 SYSTEM #: _____ RECORDER S/N#: R-91, Rc-088, Rc-074, Rc-079
Rc-070, Rc-093, Rc-037, Rc-092, R-94, R-93, R-95
 I.S.O. LINE #: _____
 SPOOL #: _____
 FIELD WELD #: _____
 CHART #: 11 Records TOTAL WELDS: _____ TOTAL TC'S: 101



WELD IDENTIFICATION AND THERMOCOUPLE LAYOUT
 THIS I.S.O. DRAWING IS COMPLETED BY THE PWHT TECHNICIAN

 TECHNICIAN

 DATE



PWHT QUALITY CONTROL SHEET

CUSTOMER Major Tool W/O# _____

DATE: 2-9-06

1. Customer has given specific direction to D.L. Ricci, as to which welds need PWHT. Heat Treating Documentation packet has been given to the technician. The technician as reviewed the procedure.
Herk Jacobs
Technician
2. Drawings of each spool piece have been completed. Each drawing shows the spool piece number and describes each weld on the spool.
Herk Jacobs
Technician
3. Welds are wrapped and troubleshooting is complete. All zones are working properly. Technician has reviewed procedure (ramp rate, soak temperature, soak time).
Herk Jacobs
Technician
4. Welds are at soak temperature. Technician has reviewed chart (checking ramp rate up to soak).
Herk Jacobs
Technician
5. When soak is complete, technician has reviewed chart, checked soak time/temperature and reviewed ramp rate to completion.
Herk Jacobs
Technician
6. PWHT is complete. Technician has reviewed chart and everything is correct. (Do not unwrap welds until this stage is signed off)
Herk Jacobs
Technician
7. Unwrap welds. Take hardness test if required and record results.

Technician