

CERTIFICATE OF QUALITY AND MATERIAL TESTING

INSPECTION CERTIFICATE N.

AC/ **2505**

DATE : **01/09/2020**

according to EN 10204.3.1

FIRM: **SSS SUPER ALLOYS LTD**

ORDER: **402604**

ORDER CONFIRMATION : **207812**

HEAT	N. of PCS	MATERIAL DESCRIPTION	MATERIAL GRADE
65587V3	2	FORGED ROUND PEELED BAR Ø209,6mm 1084kg x 3849mm length 1272kg x 4515mm length	UNS N09925 110K SSS-SA 925/1/1 Rev.01 order confirmation 207812 Rev.4 API6A CRA 1st Ed. Errata 1 + Errata 2 Addenda 1 + Addenda 2 + Addenda 3 NACE MR0175 / ISO15156-3 NACE MR0103 / ISO17945

APPROVED

By Steve Evans at 2:16 pm, Sep 04, 2020

H.T. CONDITION: Solution annealing (1010°C, 2h) + water quenched // age hardened at 741°C for 8h / furnace cooling (2h) - age hardening (621°C 8h)//air; total aging time 18h

H.T.: **3/0057**

CHEMICAL ANALYSIS

C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Sn
0,011	0,41	0,25	0,017	0,0003	20,70	44,71	3,15	2,070	
Ca	Al	V	Ti	W	Ta	Nb	Co	Fe	Nb + Ta
	0,270		2,091		0,0230	0,246		26,31	0,2690
B	N	Zr	Sb	Pb	Grain Size*		Ext.	1/2 Radius	Center
					ASTM E112		4	4	4

TEST RESULTS ON ACTUAL BAR PROLONGATION

Temp. [°C]	Direzione Direction	Rp _{0,2} [MPa]	Rp ₁ [MPa]	Rm [MPa]	A [%]	Z [%]	KV (10 x 10 mm) [J]			
RT	1/2r [L]	808		1160	29,2	40,3				
-60	1/2r [T/C-L]	Lat. Exp. [mm]: 1,12-1,17-1,14 ; Sh. Fr. [%]: 100-100-100						88,7-93,7-90,2		
Position	Ext.	1/2 r	C							
HRC	33-32-32	32-33-33	32-32-33							
Average	32	33	32							

Melting, forging, heat treating and testing operations performed at Italfond S.p.A.

Steelmaking process E.A.F. + A.O.D. + V.A.R. remelting

Forging method: drawing out by press

No welding performed on material

Material free from Mercury contamination

Material inspected with a gamma spectrometer and with no radioactive contamination beyond the limits provided for by the EU-Radiation Protection 122- part 1, when relevant

Forging ratio 6,4:1

Mechanical tests performed according to ASTM E8 (Ø12,5mm-50mm length), ASTM E23 at mid-radius and ASTM E18


Micrographic test result: free from continuous networks of secondary deleterious phases, free from acicular delta phase and free from laves phase

Macroetch Examination performed TOP & BOTTOM acc. to ASTM A604: material free from macroscopic defects, no worse than severity A

(for all 4 classes) - Etchant used: Aqua Regia

*No topological duplex grain size as per ASTM E1181

Hardness performed on bars surface: 35HRC

SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance
		 <p>ITALFOND STAINLESS STEEL AND SUPERALLOYS GARANZIA QUALITÀ</p>

CERTIFICATE OF QUALITY AND MATERIAL TESTING
ULTRASONIC TEST

INSPECTION CERTIFICATE N.

UT/ **2505**

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according to EN 10204.3.1

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SSS SUPER ALLOYS LTD

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age hardening (621°C 8h)//air; total aging time 18h

H.T.: **3/0057**

ULTRASONIC TEST REPORT

EQUIPMENT	:	KRAUTKRAMER USM 36 - S/N 15047561
CALIBRATION METHOD	:	API 6A par. 10.4.2.12.2
PROBE	:	S/N 61161_00
COUPLANT	:	GEL
KIND OF PROBE	:	B2S
SURFACE CONDITION	:	PEELED
SCANNING COVERAGE	:	100% of cylindrical surface
GAIN	:	56 dB
TESTING PROCEDURE	:	ASTM A388
ACCEPTANCE CRITERIA	:	Acceptance level 6mm FBH No multiple indications exceeding 50% of reference distance amplitude curve
RESULT	:	No recordable indications found

SURVEYORS

CUSTOMER INSPECTION

ITALFOND S.p.A.
NDE Inspector

ISO 9712 - UT PT Lev. 2
SNT-TC 1A - UT PT Lev. II
STEFANO TEOLODI

CERTIFICATE OF QUALITY AND MATERIAL TESTING

MICROGRAPHIC EXAMINATION

INSPECTION CERTIFICATE N.

ME1/ **2505**
according to EN 10204.3.1

DATE : **01/09/2020**

FIRM: **SSS SUPER ALLOYS LTD**

ORDER: **402604**

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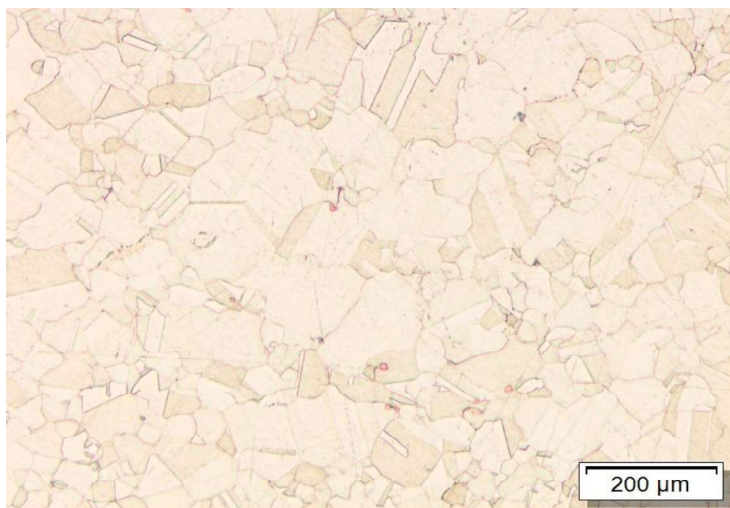
H.T.: **3/0057**


MICROGRAPHIC EXAMINATION

Magnification: 100 x

Etching: Kalling's N°2, 200ml Methanol, 200ml HCl, 10g CuCl₂

Position: Ext.



SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance
		

CERTIFICATE OF QUALITY AND MATERIAL TESTING

MICROGRAPHIC EXAMINATION

INSPECTION CERTIFICATE N.

ME2/ **2505**
according to EN 10204.3.1

DATE : **01/09/2020**

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ORDER: **402604**

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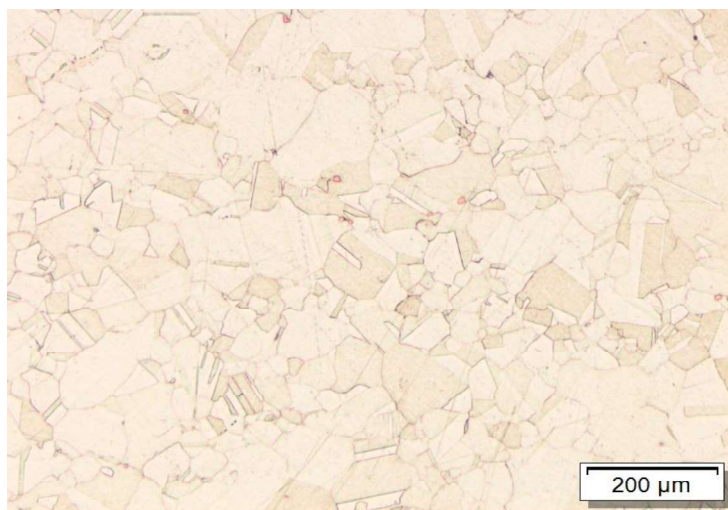
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MICROGRAPHIC EXAMINATION

Magnification: 100 x

Etching: Kalling's N°2, 200ml Methanol, 200ml HCl, 10g CuCl₂

Position: Mid Radius



SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance

CERTIFICATE OF QUALITY AND MATERIAL TESTING

MICROGRAPHIC EXAMINATION

INSPECTION CERTIFICATE N.

ME3/ **2505**
according to EN 10204.3.1

DATE : **01/09/2020**

FIRM: **SSS SUPER ALLOYS LTD**

ORDER: **402604**

ORDER CONFIRMATION : **207812**

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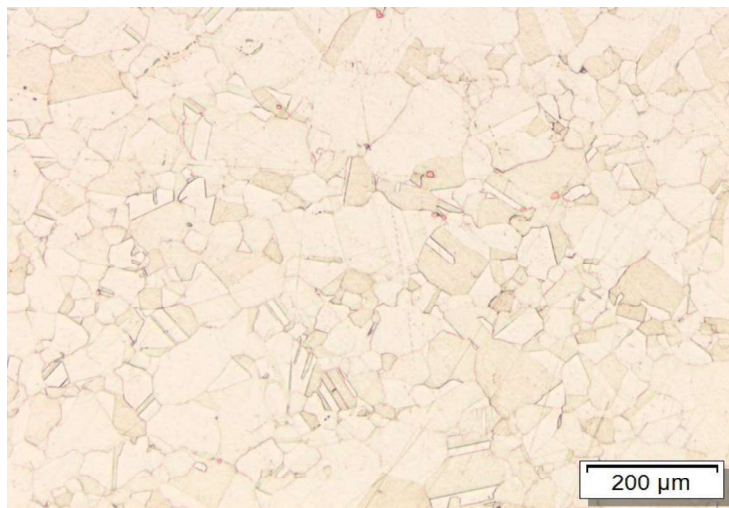
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MICROGRAPHIC EXAMINATION

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Etching: Kalling's N°2, 200ml Methanol, 200ml HCl, 10g CuCl₂

Position: Center



SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance
		 <p>ITALFOND STAINLESS STEEL AND SUPERALLOYS GARANZIA QUALITÀ</p>

CERTIFICATE OF QUALITY AND MATERIAL TESTING

MICROGRAPHIC EXAMINATION

INSPECTION CERTIFICATE N.

ME4/ **2505**

DATE : **01/09/2020**

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FIRM: **SSS SUPER ALLOYS LTD**

ORDER: **402604**

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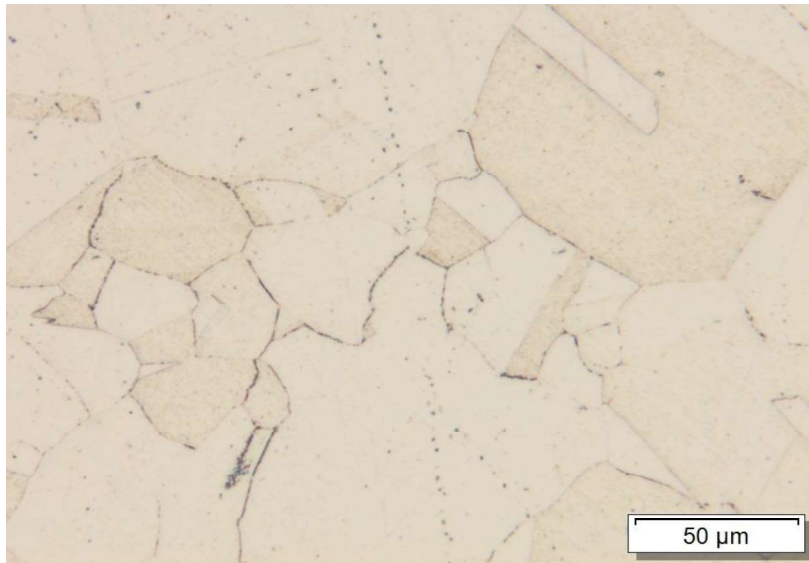
H.T.: **3/0057**


MICROGRAPHIC EXAMINATION

Magnification: 500 x

Etching: Kalling's N°2, 200ml Methanol, 200ml HCl, 10g CuCl₂

Position: Ext.



SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance
		 GARANZIA QUALITÀ

CERTIFICATE OF QUALITY AND MATERIAL TESTING

MICROGRAPHIC EXAMINATION

INSPECTION CERTIFICATE N.

ME5/ **2505**
according to EN 10204.3.1

DATE : **01/09/2020**

FIRM: **SSS SUPER ALLOYS LTD**

ORDER: **402604**

ORDER CONFIRMATION : **207812**

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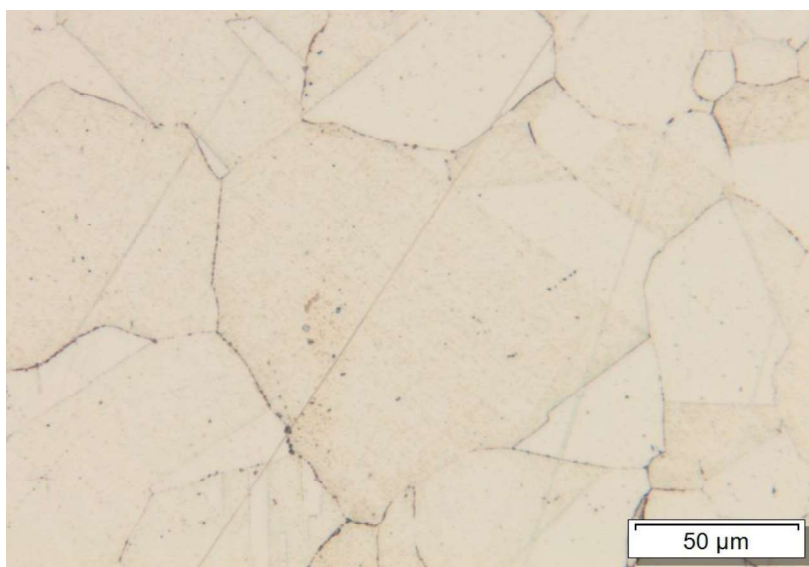
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MICROGRAPHIC EXAMINATION

Magnification: 500 x

Etching: Kalling's N°2, 200ml Methanol, 200ml HCl, 10g CuCl₂

Position: Mid Radius



50 µm

SURVEYORS

CUSTOMER INSPECTION

ITALFOND S.p.A.
Quality Assurance

CERTIFICATE OF QUALITY AND MATERIAL TESTING

MICROGRAPHIC EXAMINATION

INSPECTION CERTIFICATE N.

ME6/ **2505**
according to EN 10204.3.1

DATE : **01/09/2020**

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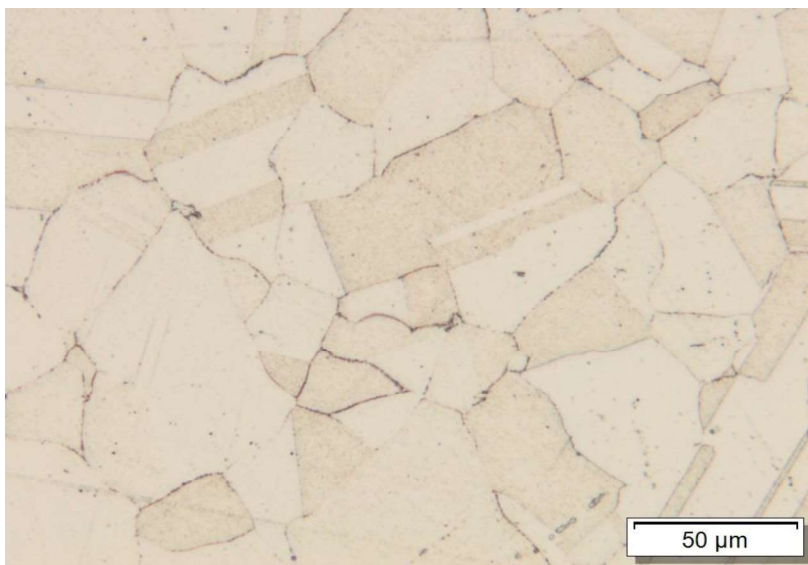
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Position: Center



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		 <p>ITALFOND STAINLESS STEEL AND SUPERALLOYS GARANZIA QUALITÀ</p>

TRATTAMENTO TERMICO HEAT TREATMENT

Solution annealing 1010°C (2h) + water quenched

Numero di Trattamento termico **1/0173**
Heat treatment number

Data di esecuzione **18/02/20**
Date of execution

Numero forno di Trattamento termico **T1**
Heat treatment furnace number

Note:

TUS performed on November 2019 according to:
AMS 2750 E 2012-07
API6A Ed.21 Annex M + API6D Ed.24 Annex F
Norsok M-650 Ed.4 Annex B
ASTM A991/991M-10
Next calibration on May 2020

Calibration of controlling and recording instruments performed on February 2019 – Next calibration on May 2020

Temperature controlled with "Furnace and Heat Sink thermocouples"

Age hardening 741°C (8h) // air + furnace cooling (2h) + Age hardening 621°C (8h) // air – Total aging time: 18h

Numero di Trattamento termico **3/0057**
Heat treatment number

Data di esecuzione **10/03/20**
Date of execution

Numero forno di Trattamento termico **T3**
Heat treatment furnace number

Note:

TUS performed on January 2020 according to:
AMS 2750 E 2012-07
Next calibration on April 2020

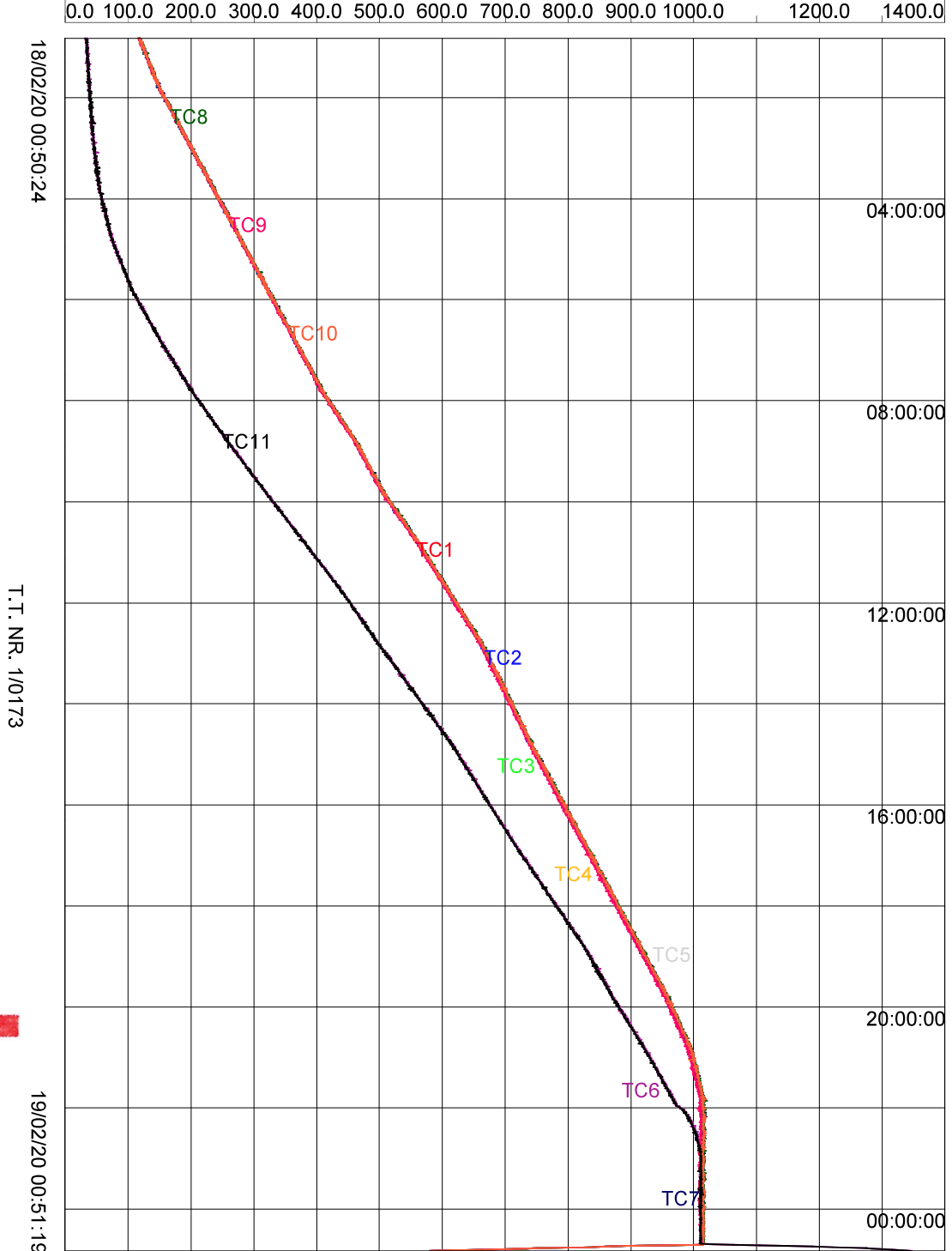
Calibration of controlling and recording instruments performed January 2020 – Next calibration on April 2020

Temperature controlled with "Furnace and Heat Sink thermocouples"

Heat number	Grade	Order	Diameter [mm]		Number of pieces
			Solution Annealing	Age Hardening	
65587V3	UNS N09925	207812	Ø223	Ø209.6	2

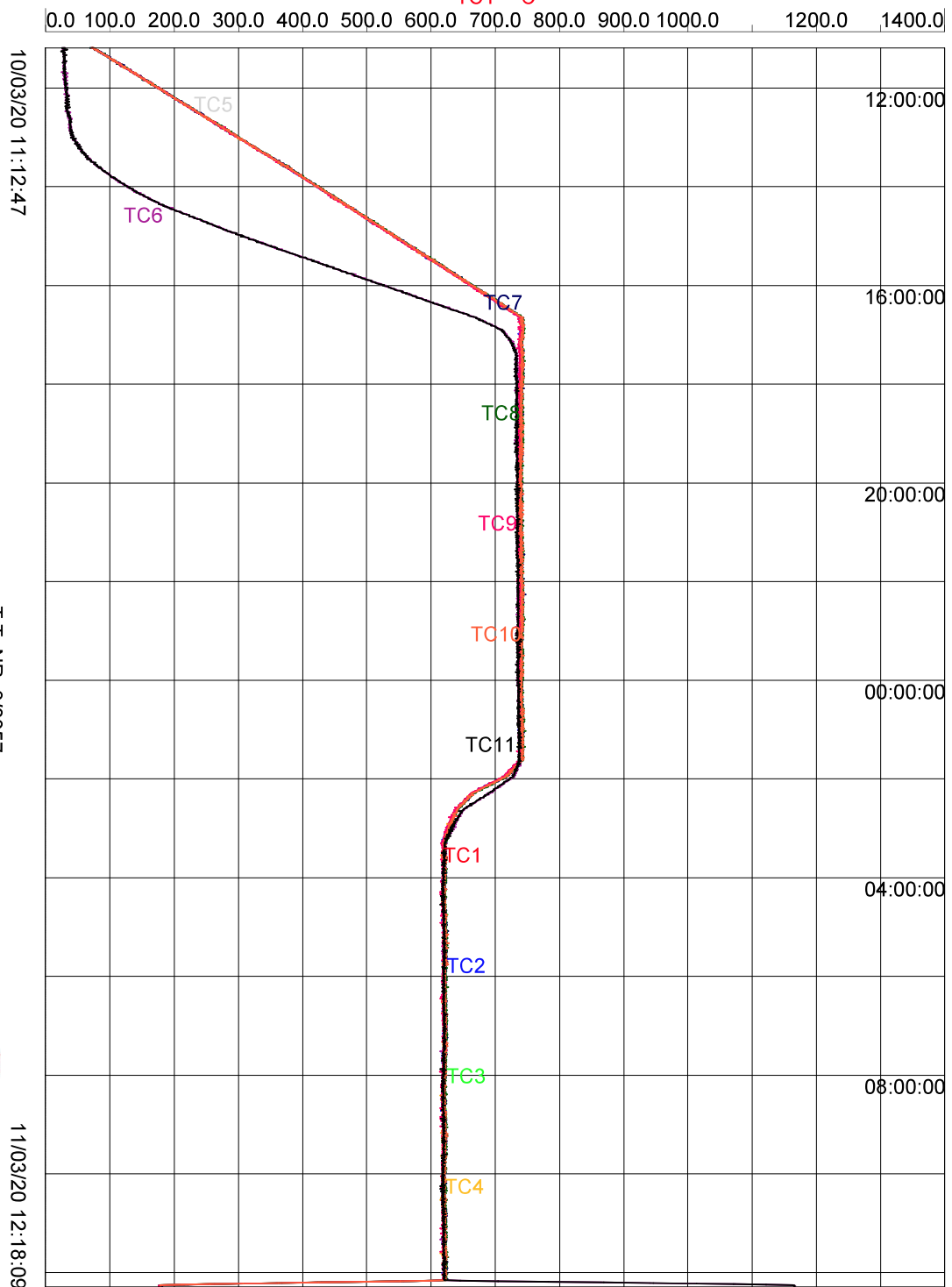
Firma:

TC11 °C
 TC10 °C
 TC9 °C
 TC8 °C
 TC7 °C
 TC6 *C
 TC5 *C
 TC4 *C
 TC3 *C
 TC2 *C
 TC1 *C



T.T. NR. 1/0173

TC11 °C
 TC10 °C
 TC9 °C
 TC8 °C
 TC7 °C
 TC6 °C
 TC5 °C
 TC4 °C
 TC3 °C
 TC2 °C
 TC1 °C



T.T. NR. 3/0057

CERTIFICATO DI RIQUALIFICAZIONE

Requalification Certificate

Data: 30.09.2016

Date

In conformità a quanto stabilito dal documento ASNT "Recommended Practice Nr. SNT-TC-1A, edizione in vigore,
In conformity with what is established in the document ASNT, in force edition,

Stabilita la validità del certificato originario e la relativa data di scadenza,
Established the validity of the original certificate and the relative expiry date,

Documentato il permanere dei requisiti fisici,
Proved the permanence of the physical requirements,

Verificata la continuità di lavoro pratico nel metodo per il quale è richiesta la riqualificazione,
Verified the continuity of the practical work method for which the requalification is required,

il Signor :

Mr.

Stefano TEDOLDI

della Società:

of the Company

ITALFOND SPA

soddisfa i requisiti di riqualificazione senza esami per il metodo:
satisfies the requisites for the requalification without examination for the method:

ULTRASUONI 2° Livello

Ultrasonic - 2° Level

Questo Certificato di Riqualificazione è rinnovato per anni cinque e deve essere allegato al dossier originale di qualificazione.
This Requalification Certificate is renewed for five years and must be attached to the original qualification documentation.

N° d'identificazione FG2511

Identification Nr

Prossima Scadenza 30.09.2021

ext Expire Date

3° livello CND Studio

CND Studio level 3



Il Datore di Lavoro
Employer

3° Livello ASNT
ASNT level 3

GIANNOLI GIUSEPPE
MEC. ENG LEVEL III BY EXAM
ASNT CERT. N. 27936
INI EN 473 - CERT. N. 17715/PND/C

Il Sig: **Stefano TEDOLDI**
è qualificato al **2° Livello**
in accordo alla Recommended Practice Nr. SNT-TC-1A per i metodi indicati e scadenze:

<input checked="" type="checkbox"/> UT	30.09.2021	<input type="checkbox"/> MT
<input type="checkbox"/> RT		<input type="checkbox"/> ET
<input type="checkbox"/> PT	12.09.2019	<input type="checkbox"/> VT

CERT. N° FG2511