



भारत सरकार - रेल मंत्रालय
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Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
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TM/HM/USFD, VOL-1

Date :- -07-2022

I-	मुख्य अभियन्ता (ट्रैक मशीन) सभी क्षेत्रिय रेलवे	Chief Engineer (Track Machines) All Zonal Railways
II-	मुख्य कार्यशाला प्रबन्धक (ट्रैक मशीन) सी.पी.ओ.एच. कार्यशाला प्रयागराज, रायनापाडु, कंचरापारा, अहमदाबाद,	Chief Workshop Manager (Track Machines) CPOH Workshop, Prayagraj, Rayanapadu, Kanchrapara, Ahmedabad
III-	प्रधानाचार्य भारे.रे.प.म.प्र.के. पीपलगांव प्रयागराज -211011	Principal, IRTMTC, Pipal Gaon, Prayagraj - 211011
	Details of addresses are overleaf.	

विषय : सी०आर०सी०सी०-निमित्त यस० बी० सी०एम० (बी० यस० 550), पी०सी०टी० और एम०पी०टी० मशीनो के एक्सलो की अल्ट्रासोनिक जाँच करने हेतु टेन्टेटिव कोड आफ प्रोसेड्युर।

Sub: Tentative Code of procedure for Ultrasonic Testing of Axles of SBCM, PCT & MPT of CRCC make machines.

Ref.- E- file no.-RDSO-MCONDT(TEST)/12/2020-O/o-Director/MC/RDSO, dt. 06.06.2022

सी०आर०सी०सी०-निमित्त यस०बी०सी०एम० मशीन (बी० यस० 550), पी०सी०टी० (16W&XDC16W) और एम०पी०टी० (DDC-16W) मशीनो के एक्सलो की अल्ट्रासोनिक जाँच करने हेतु टेन्टेटिव कोड आफ प्रोसेड्युर तैयार किया गया है, जिसे अ.अ.मा सं की वेबसाइट पर निम्न पते पर आप के सूचनार्थ तथा मशीन के कर्मचारियों जो फील्ड में काम कर रहे हैं, के मार्ग दर्शन हेतु अपलोड किया गया है। इस विधि द्वारा एक्सल की अल्ट्रासोनिक जाँच करने के पश्चात जो भी फीडबैक हो उसे अवश्य भेजे। ये फीडबैक एक्सल (जब यह मशीन से अलग उपलब्ध हो एवं व्हील सेट से सलग्न हो) की अल्ट्रासोनिक जाँच करने हेतु विस्तृत कोड आफ प्रोसेड्युर बनाने में सहायता करेगा। जब इस तरह का एक्सल (जो मशीन से अलग एवं व्हील सेट से सलग्न हो) उपलब्ध हो, तो इसके उपलब्ध स्थान एवं तिथि की सूचना घातु एवं रसायन निदेशालय के साथ इस निदेशालय को भी भेजने की कृपा करें, ताकि आगे की कारवाई जा सकें।

Tentative Code of procedure for Ultrasonic Testing of Axles of SBCM (BS-550), PCT (16W & XDC16W) & MPT (DDC-16W) of CRCC make machines have been uploaded on the RDSO website on the address given below for your information and implementation on your railways. It is requested to send feedback on ultrasonic testing done on the basis of tentative code of procedure. These feedback may help in preparing detailed code of procedure on the availability of axle in loose (fitted with wheel set) and in fitted condition. Availability of axle (place & date) may please intimated to M&C Dte. of RDSO as well as to this Dte. for further action.

<http://www.rdsolndianrailways.gov.in>→Directorates→Track Machine and Monitoring
→Functions-SN 2.c) Guidelines/Instructions. → Code of Procedure for Ultrasonic Testing of Axles of Track Machines (Sr. no. 22-24)

DA: As above

Digitally Signed by Om

Prakash

(ओम प्रकाश)

Date: 13-07-2022 15:10:20

निदेशक रेल पथ मशीन-III

Reason: Approved

I- मुख्य अभियन्ता (ट्रैक मशीन)

- 1.0 मध्य रेलवे, सीएसटी, मुम्बई-400001
- 2.0 फेयरलीप्लेस, पूर्वरेलवे, कोलकाता-700001
- 3.0 बड़ौदा हाउस, उत्तररेलवे, नयी दिल्ली-110001
- 4.0 उत्तरपूर्व रेलवे, गोरखपुर 273012
- 5.0 मालीगांव, उत्तरपूर्वसीमान्त रेलवे, गुवाहाटी-781011
- 6.0 पार्कटाउन, दक्षिणरेलवे, चेन्नई-600003
- 7.0 रेलनिलयम्, दक्षिण मध्य रेलवे, सिकन्दराबाद-500371
- 8.0 गार्डनरीच, दक्षिणपूर्व रेलवे, कोलकाता-700043
- 9.0 चर्चगेट, पश्चिम रेलवे, मुम्बई-400020
- 10.0 उत्तरपश्चिम रेलवे, जयपुर-302001
- 11.0 पूर्व मध्य रेलवे, हाजीपुर-844101
- 12.0 दक्षिणपश्चिम रेलवे, हुवली-580023
- 13.0 उत्तर मध्य रेलवे, प्रयागराज-211015
- 14.0 पूर्वतट रेलवे, भुवनेश्वर-751001
- 15.0 पश्चिम मध्य रेलवे, जबलपुर-482001
- 16.0 दक्षिणपूर्व मध्य रेलवे, बिलासपुर-495004

II- मुख्य कार्यशाला प्रबन्धक (ट्रैक मशीन)

- 1.0 सी.पी.ओ.एच. कार्यशाला पो0 धूमनगंज प्रयागराज-221012
- 2.0 सी.पी.ओ.एच. कार्यशाला, दक्षिण मध्य रेलवे, रायनापाडु,, विजयवाडा, जिला कृष्णा, आन्ध्रप्रदेश. 521241
- 3.0 सी.पी.ओ.एच. कार्यशाला पूर्व रेलवे, भूतबागान रेलवे कालोनी कांचरापारा पी0एस0 बिजपुर पी0ओ0. कांचरापारा पश्चिमबंगाल.743145
- 4.0 मुख्य अभियन्ता सी.पी.ओ.एच.पश्चिमरेलवे, मंडल रेलप्रबन्धक कार्यालय चामुंडामाता मन्दिर के पास नरोडारोडए पोस्ट. सैजपुरबोधा अहमदाबाद. 382345

III- प्रधानाचार्य भा.रे.रे.प.म.प्र.के. पीपलगांव प्रयागराज-211011**Chief Engineer (Track Machines)**

CST, C R, Mumbai - 400001.
 Fairlie Place, E R, Kolkata-700001.
 Baroda House, N R, New Delhi-110001.
 N E R, Gorakhpur-273 012.
 Maligaon, N F R, Guwahati -781011.
 Park Town, S R, Chennai -600003.
 Rail Nilayam, SCR, Secunderabad-500371.
 Garden Reach, S E R, Kolkata-700043.
 Churchgate, W R, Mumbai-400020

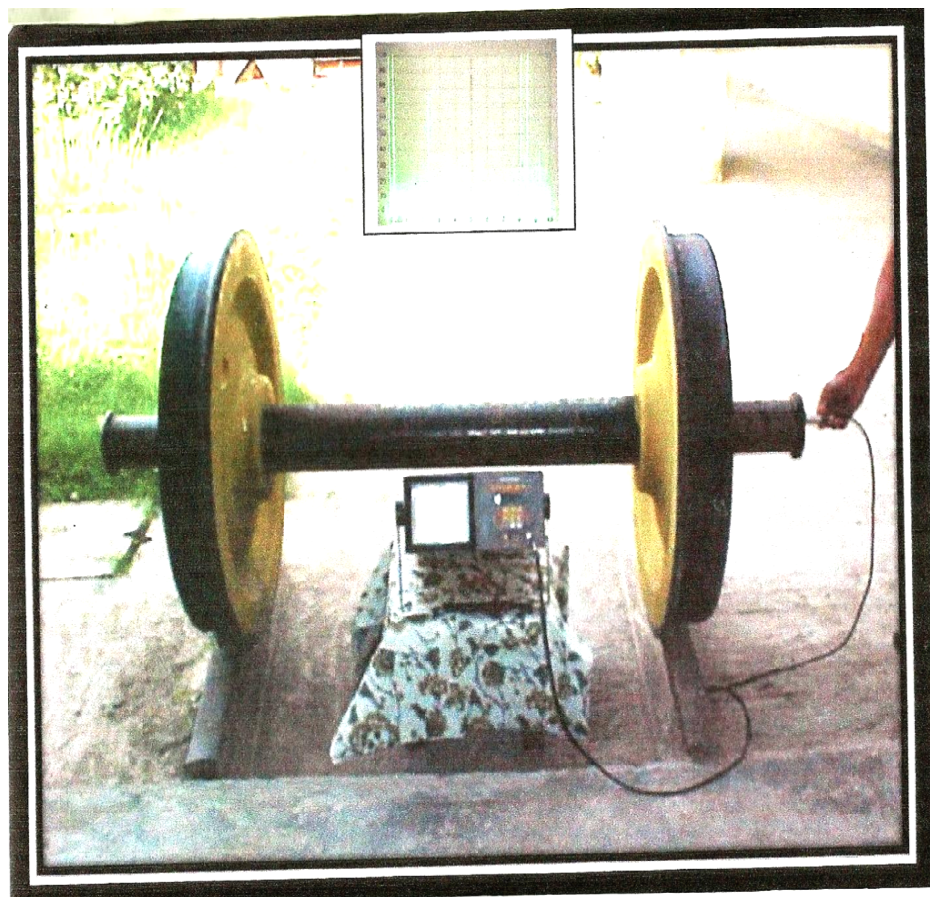
N W R, Jaipur-302001.
 E C R, Hazipur-844101
 SWR, Hubli-580023
 NCR, Prayagraj -211015
 East Coast Rly, Bhubaneswar-751001
 WCR, Jabalpur-482001
 South East Central Rly, Bilaspur-495004

Chief Workshop Manager (Track Machines)

CPOH Workshop, PO. Dhoomanganj Prayagraj -221012

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 Rayanapadu, Vijaywada, Dist.- Krishna, Andhra Pradesh-521241
 CPOH Workshop, Eastern Railway, Bhutbagan Railway Colony, Kanchrapara, P.S: Bizpur, P.O.: Kanchrapara, West Bengal-743145
 Chief Engineer. C.P.O.H, Western Railway, Divisional Office, Near Chamunda Mata Mandir, Naroda Road, Post- SaijpurBogha, Ahmedabad-382345

Principal, IRTMTC, PipalGaon, Prayagraj-211011



**TENTATIVE CODE OF PROCEDURES FOR ULTRASONIC
TESTING OF AXLES OF
TRACK MACHINE
July-2022**

References

S.No.	Machine Model	Type/Position of Axles	Report / Drawing Referred	RDSO Letter No.	Date of Issue
1.	Shoulder Ballast Cleaner (SBCM-550 CRCC)	1st 2nd, 3rd & 4th Power axle	BS500W(IND)-20-06-01-01	TM/HM/USFD	July-2022
2.		1st & 2nd Non Power axle	CDC16W(IND)-08-03-01		
3.	PCT-CRCC (CDC-16W & XDC 16NW)	First Power Axle	CDC16W(IND)-07-02-01		
4.		Second Power Axle	CDC16W(IND)-07-03-01		
5.		Third Power Axle	CDC16W(IND)-08-02-01		
6.		Non-Power Axle	CDC16W(IND)-08-03-01		
7.	MPT-CRCC (DDC-16W)	First Power Axle	DDCI6W(IND)-08-02-01a		
8.		Second Power Axle	DDCI6W(IND)-08-02-01a		
9.		Non-Power Axle	DDC16W(IND)-08-03-01a		

CONTENT

S.No.	Machine Model	Position of Axles	Drawing Referred	Dimensional Drawing	Page No.
1.	L.NO.M&C/NDT/1/8,Vol-25,dt.08/09.03.2021		-----		2
2.	Shoulder Ballast Cleaner (SBCM-550 CRCC)	1st 2nd, 3rd & 4th Power axle	BS500W(IND)-20-06-01-01	-	3-5
3.	Shoulder Ballast Cleaner (SBCM-550 CRCC)	1st & 2nd Non Power axle	CDC16W(IND)-08-03-01	All axles dimension same	6-8
4.	PCT-CRCC (CDC-16W & XDC 16NW)	Non-Power Axle	CDC16W(IND)-08-03-01		
5.	MPT-CRCC (DDC-16W)	Non-Power Axle	DDC16W(IND)-08-03-01a		
6.	PCT-CRCC (CDC-16W & XDC 16NW)	First Power Axle	CDC16W(IND)-07-02-01	-	9-10
7.	PCT-CRCC (CDC-16W & XDC 16NW)	Second Power Axle	CDC16W(IND)-07-03-01		11-12
8.	PCT-CRCC (CDC-16W & XDC 16NW)	Third Power Axle	CDC16W(IND)-08-02-01	All axles dimension same	13-15
9.	MPT-CRCC (DDC-16W)	First Power Axle	DDC16W(IND)-08-02-01a		
10.	MPT-CRCC (DDC-16W)	Second Power Axle	DDC16W(IND)-08-02-01a		

Since, the dimensions of some axles are same. Hence 05 nos. of Code of Procedures issued.

M&C DIRECTORATE

E-file No.: RDSO-MCONDT (TEST)/12/2020-O/o Director/MC/RDSO

दिनांक: 06.06.2022

विषय: Code of Procedure for Ultrasonic Testing of Axles of Track Machines.

संदर्भ: Your note No. No. TM/HM/USFD Date- 14-02-2022.

With reference to the above, tentative code of procedures for Ultrasonic testing of axles of Track Machines have been prepared on the basis of drawing provided and the details are as under:

S. No.	Machine Model	Position of Axles	Drawing No.	Remarks
1.	Shoulder Ballast Cleaner (SBCM-550 CRCC)	1st ,2nd, 3rd & 4th POWER AXLE	B5500W(IND)-20-06-01-01	Since, the dimensions of some axles are same. Hence, 05 nos. of tentative Code of procedures (COPs) attached.
2.		1st & 2nd Non Power Axle	CDC16W(IND)-08-03-01	
3.	PCT-CRCC (CDC-16W & XDC 16W)	First Power Axle	CDC16W(IND)-07-02-01	
4.		Second Power Axle	CDC16W(IND)-07-03-01	
5.		Third Power Axle	CDC16W(IND)-08-02-01	
6.		Non-Power Axle	CDC16W(IND)-08-03-01	
7.	MPT-CRCC (DDC-16W)	First Power Axle	DDC16W(IND)-08-02-01a	
8.		Second Power Axle	DDC16W(IND)-08-02-01a	
9.		Non-Power Axle	DDC16W(IND)-08-03-01a	

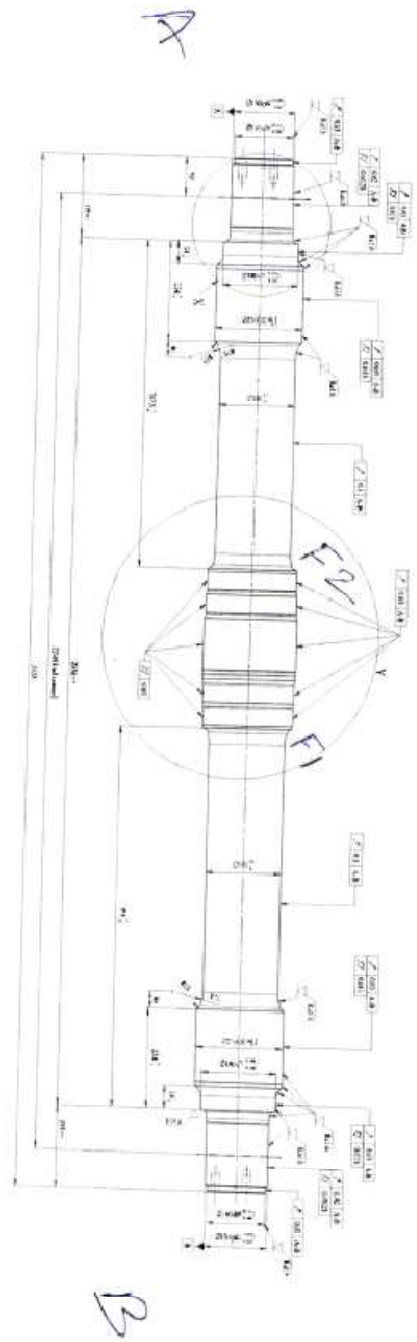
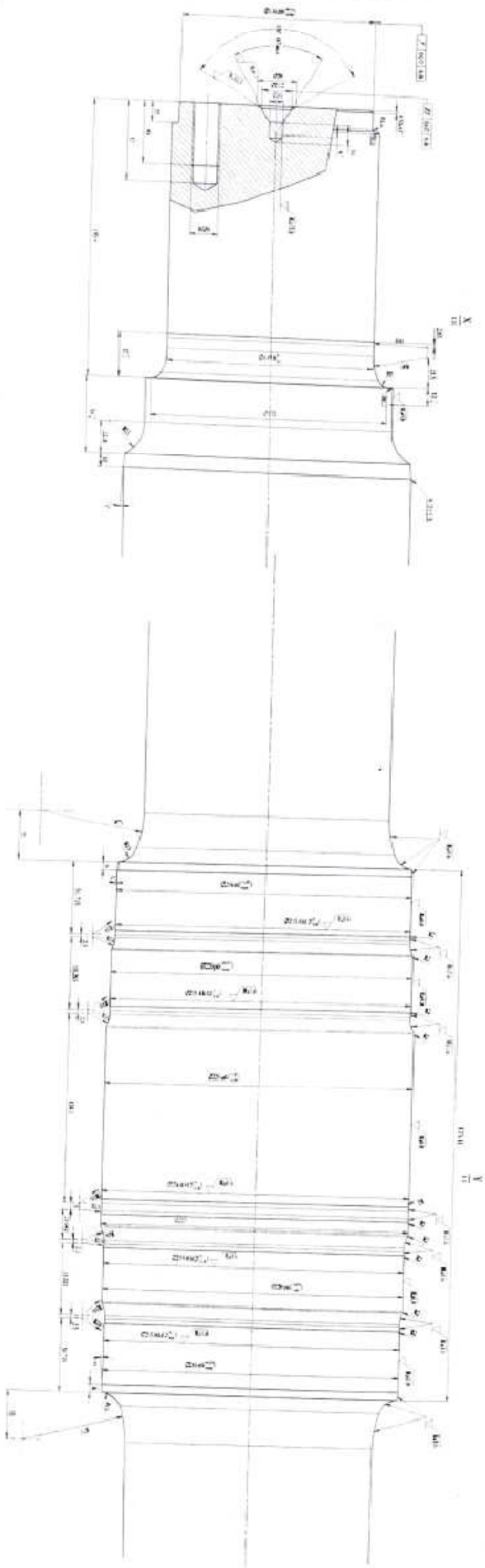
The detailed Code of Procedures (COPs) for axles will be prepared as per the availability of axles (place and date) in loose (fitted with wheel sets) and in fitted condition. Necessary feedback regarding ultrasonic testing of axles using above tentative code of procedures and availability of axles may be intimated to this office for further action please.

Encl: As above


(Rajesh Srivastava)
Director/M&C

Director/TM-III

Sl.No.1



Research Designs and Standards Organization
Ministry of Railways
Lucknow-226011
M&C Directorate

June- 2022

Theoretical calculation and relative positions of signals during Ultrasonic Testing of Axle of Track Machine, Model: Shoulder Ballast Cleaner (SBCM-550 CRCC, Powered axle), to Drawing No. BS500W (IND)-20-06-01-01 (Tentative COP).

(A) Far end Scanning

Calibration: 1 Main Scale Div.= 250 mm (compression wave)

Probe: 20/25 mm, Dia., 2.5 MHz, Single Crystal Normal Probe

From End A :-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed Reflection from Journal fillet	2394	9.6
3.	Delayed Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed -2 Reflection from fillet 1(F1)	1699	6.8
7.	Delayed -1 Reflection from fillet 1(F1)	1537	6.2
8.	Direct Reflection from fillet 1(F1)	1339	5.4
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7

From End B:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed -2 Reflection from fillet 2(F2)	1826	7.3
7.	Delayed -1 Reflection from fillet 2(F2)	1664	6.7
8.	Direct Reflection from fillet 2(F2)	1466	5.9
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7


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 Min. of Railways, Morad Nagar
 Lucknow-226011

(B) Near End Low Angle Scanning

1 Main Scale Div. = 100 mm (Compression wave)

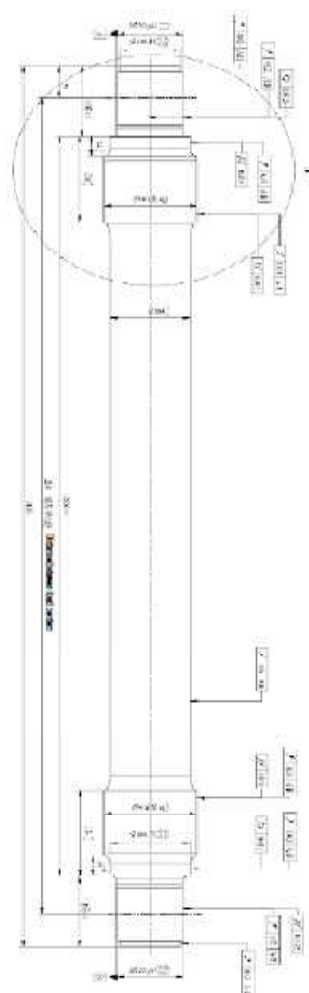
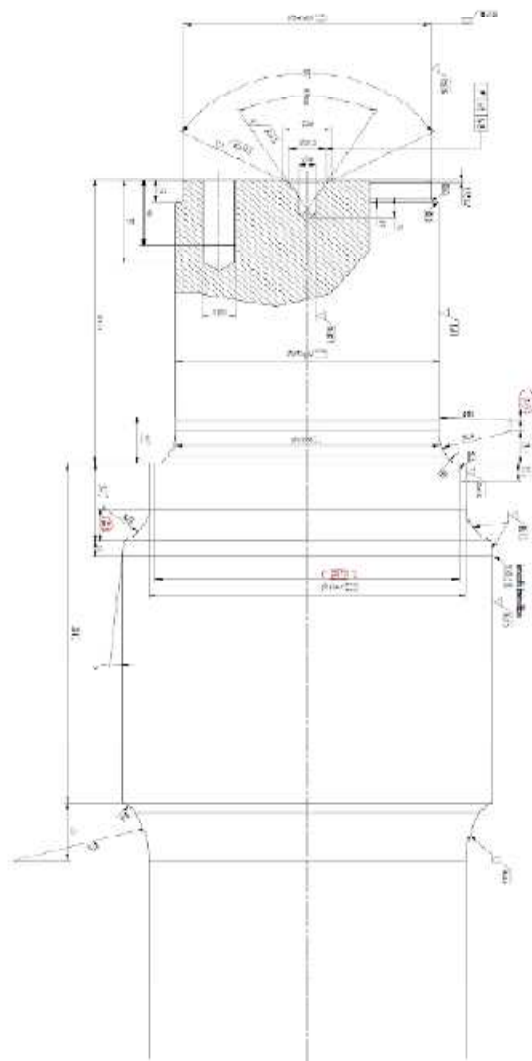
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal, Perspex Wedge for 17.5°

From both Ends (A & B)

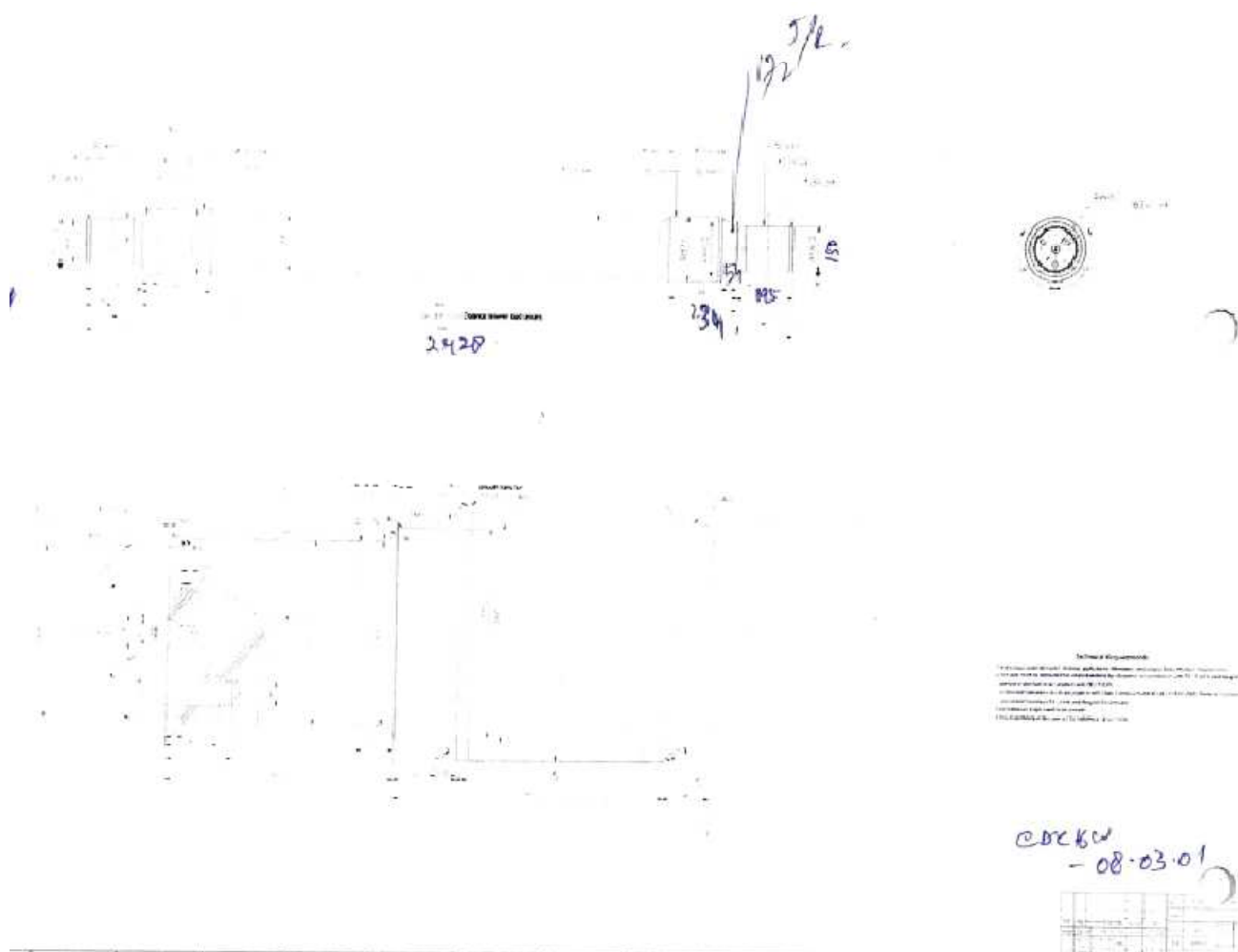
S. No.	DETAILS	DISTANCE(mm)	SIGNAL (div.)
1	Direct reflection from wheel seat inner fillet, centre of probe position on axle end face at a distance of 40 mm from axle end face outer periphery, probe angle 17.5°.	450	4.5*

* Signal may shift due to Perspex correction.


 06.06.22
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 Lucknow

[illegible]

1280444/2022/O/o PED/INFRA-1/RDSO



A-side

B-side

CDC16W(IND)-08-03-01

Research Designs and Standards Organization
Ministry of Railways
Lucknow-226011
M&C Directorate

June- 2022

Theoretical calculation and relative positions of signals during Ultrasonic Testing of Axle of Track Machine, **Model:** Shoulder Ballast Cleaner (SBCM-550 CRCC non-powered axle) & **Model:** PCT-CRCC (CDC-16W & XDC 16W non-powered axle) to Drawing No. CDC16W (IND)-08-03-01 and **Model:** MPT-CRCC (DDC-16W non-powered axle) to drawing no. DDC16W (IND)-08-03-01a.
(Tentative COP).

(A) Far end Scanning

Calibration: 1 Main Scale Div. = 250 mm (compression wave)

Probe: 20/25 mm, Dia., 2.5 MHz, Single Crystal Normal Probe

From Both Ends:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
7.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
8.	Direct Reflection from wheel seat inner fillet	429	1.7

(B) Near End Low Angle Scanning

1 Main Scale Div. = 100 mm (Compression wave)

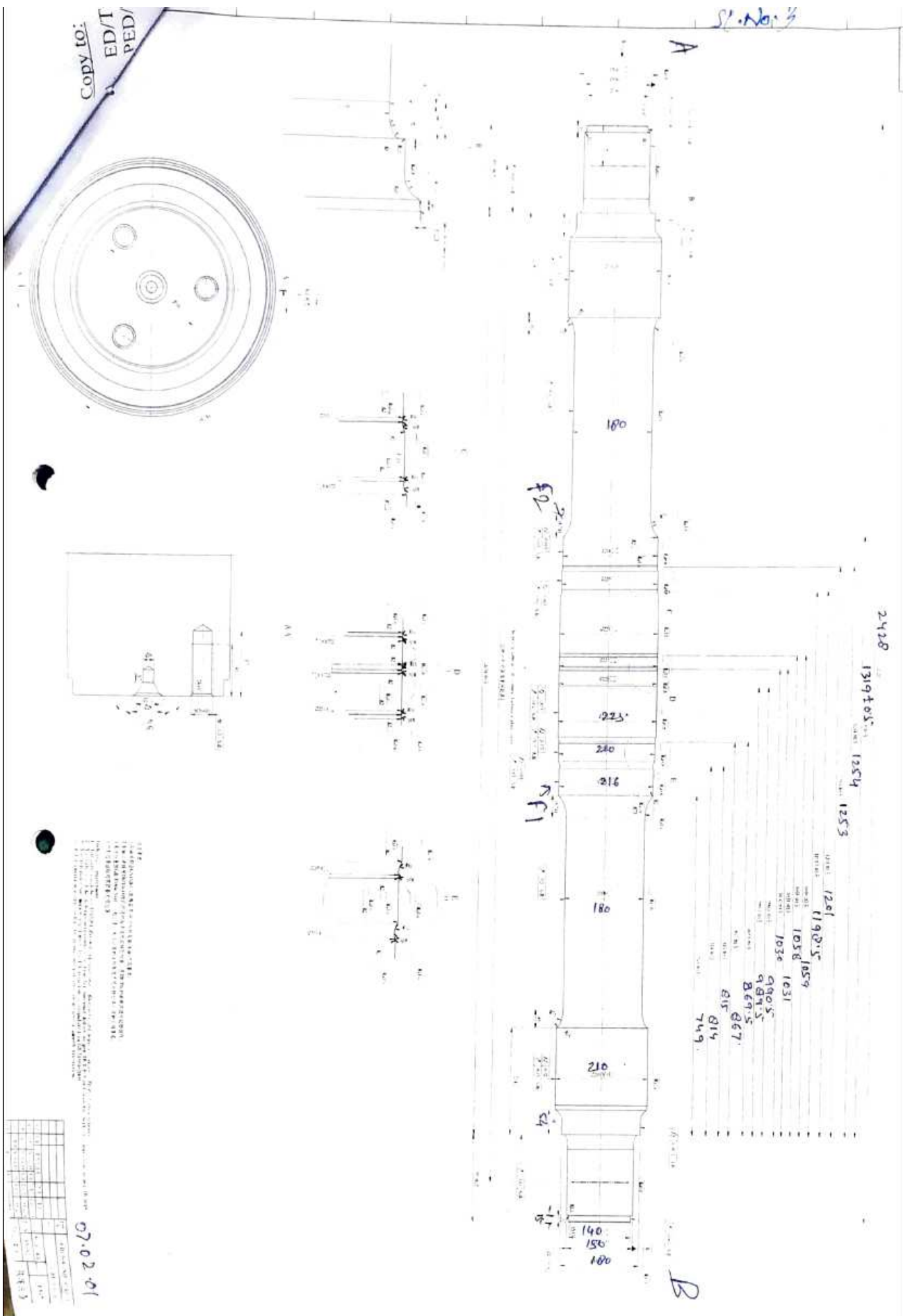
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal, Perspex Wedge for 17.5°.

From both Ends (A & B)

S. No.	DETAILS	DISTANCE(mm)	SIGNAL (div.)
1	Direct reflection from wheel seat inner fillet, centre of probe position on axle end face at a distance of 40 mm from axle end face outer periphery, probe angle 17.5°.	450	4.5*

* Signal may shift due to Perspex correction.


 06/06/22
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Research Designs and Standards Organization
Ministry of Railways
Lucknow-226011
M&C Directorate

June- 2022

Theoretical calculation and relative positions of signals during Ultrasonic Testing of Axle of Track Machine, Model: PCT-CRCC (CDC-16W & XDC 16W Power axle) to drawing no. CDC16W (IND)-07-02-01 (Tentative COP).

(A) Far End Scanning

Calibration: 1 Main Scale Div.= 250 mm (compression wave)

Probe: 20/25 mm, Dia., 2.5 MHz, Single Crystal Normal Probe

From End A:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed-2 Reflection from fillet1 (F1)	1839	7.4
7.	Delayed-1 Reflection from fillet1 (F1)	1677	6.7
8.	Direct Reflection from fillet1 (F1)	1479	5.9
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7

From End B:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed-2 Reflection from fillet 2 (F2)	1874	7.5
7.	Delayed-1 Reflection from fillet 2 (F2)	1712	6.8
8.	Direct Reflection from fillet 2 (F2)	1514	6.1
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7

(B) Near End Low Angle Scanning

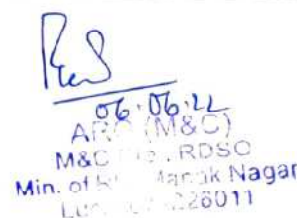
1 Main Scale Div. = 100 mm (Compression wave)

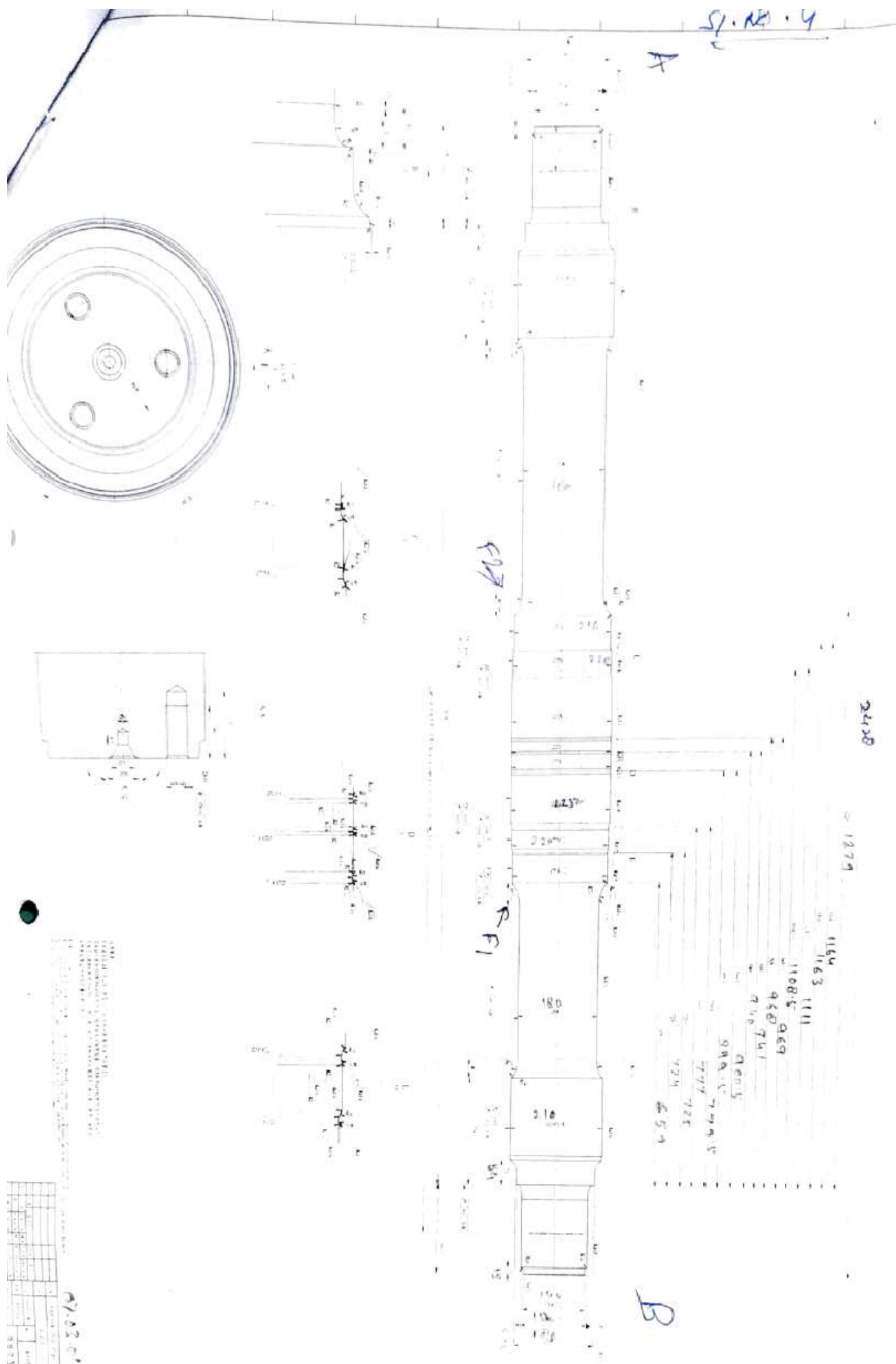
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal, Perspex Wedge for 17.5°.

From both Ends (A & B)

S. No.	DETAILS	DISTANCE(mm)	SIGNAL (div.)
1	Direct reflection from wheel seat inner fillet, centre of probe position on axle end face at a distance of 40 mm from axle end face outer periphery, probe angle 17.5°.	450	4.5*

* Signal may shift due to Perspex correction.


 06.06.22
 ARD (M&C)
 M&C Div. RDSO
 Min. of Railways, Lucknow
 Lucknow-226011



Research Designs and Standards Organization
Ministry of Railways
Lucknow-226011
M&C Directorate

June- 2022

Theoretical calculation and relative positions of signals during Ultrasonic Testing of Axle of Track Machine, Model: PCT-CRCC (CDC-16W & XDC 16W Powered axle) to drawing no.CDC16W (IND)-07-03-01 (Tentative COP).

(A) Far end Scanning

Calibration: 1 Main Scale Div. = 250 mm (compression wave)

Probe: 20/25 mm, Dia., 2.5 MHz, Single Crystal Normal Probe

From End A:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed-2 Reflection from fillet1 (F1)	1934	7.7
7.	Delayed-1 Reflection from fillet1 (F1)	1772	7.1
8.	Direct Reflection from fillet1 (F1)	1574	6.3
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7

From End B:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed-2 Reflection from fillet 4 (F4)	1784	7.1
7.	Delayed-1 Reflection from fillet 4 (F4)	1622	6.5
8.	Direct Reflection from fillet 4 (F4)	1424	5.7
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7

(B) Near End Low Angle Scanning

1 Main Scale Div. = 100 mm (Compression wave)

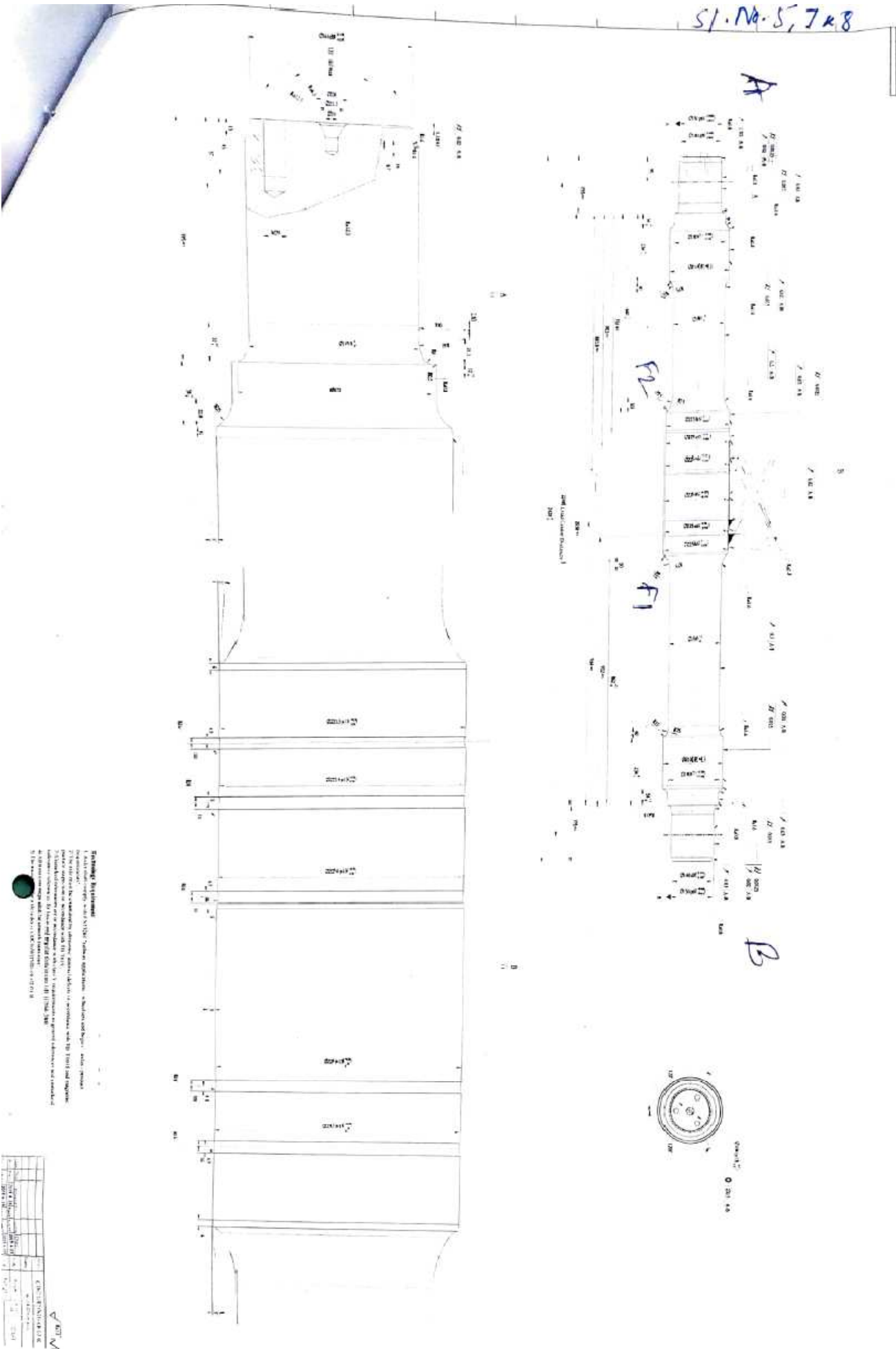
Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal, Perspex Wedge for 17.5°.

From both Ends (A & B)

S. No.	DETAILS	DISTANCE(mm)	SIGNAL (div.)
1	Direct reflection from wheel seat inner fillet, centre of probe position on axle end face at a distance of 40 mm from axle end face outer periphery, probe angle 17.5°.	450	4.5*

* Signal may shift due to Perspex correction.

06-06-22
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June- 2022

Theoretical calculation and relative positions of signals during Ultrasonic Testing of Axle of Track Machine, **Model:** PCT-CRCC (CDC-16W & XDC 16W Powered axle) to drawing no. CDC16W (IND)-08-02-01 and **Model:** MPT-CRCC (DDC-16W) to drawing no. 08-02-01a (Tentative COP).

(A) Far end Scanning

Calibration: 1 Main Scale Div.= 250 mm (compression wave)

Probe: 20/25 mm, Dia., 2.5 MHz, Single Crystal Normal Probe

From End A:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Delayed-1 Reflection from Journal fillet	2394	9.6
3.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
4.	Direct Reflection from Journal fillet	2233	8.9
5.	Direct Reflection from wheel seat outer fillet	2179	8.7
6.	Delayed-2 Reflection from fillet1 (F1)	1740	7.0
7.	Delayed-1 Reflection from fillet1 (F1)	1574	6.3
8.	Direct Reflection from fillet1 (F1)	1371	5.5
9.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Direct Reflection from wheel seat inner fillet	429	1.7

From End B:-

S. No.	DETAILS	DISTANCE (mm)	SIGNAL (div.)
1.	Direct Reflection from Axle End	2428	9.7
2.	Direct Reflection from Journal fillet	2233	8.9
3.	Delayed-1 Reflection from Journal fillet	2394	9.6
4.	Direct Reflection from wheel seat outer fillet	2179	8.7
5.	Delayed-1 Reflection from wheel seat outer fillet	2374	9.5
6.	Direct Reflection from fillet 2 (F2)	1552	6.2
7.	Delayed-1 Reflection from fillet 2 (F2)	1755	7.0
8.	Delayed-2 Reflection from fillet 2 (F2)	1921	7.7
9.	Direct Reflection from wheel seat inner fillet	429	1.7
10.	Delayed-1 Reflection from wheel seat inner fillet	624	2.5
11.	Delayed-2 Reflection from wheel seat inner fillet	784	3.1

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(B) Near End Low Angle Scanning

1 Main Scale Div. = 100 mm (Compression wave)

Probe: 20/25 mm Dia., 2.5 MHz, Normal Probe, Single Crystal, Perspex Wedge for 17.5°.

From both Ends (A & B)

S. No.	DETAILS	DISTANCE(mm)	SIGNAL (div.)
1	Direct reflection from wheel seat inner fillet, centre of probe position on axle end face at a distance of 40 mm from axle end face outer periphery, probe angle 17.5°.	450	4.5*

* Signal may shift due to Perspex correction.


 06.06.22
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