



भारत सरकार - रेल मंत्रालय
अनुसंधान अभिकल्प और मानक संगठन
लखनऊ - 226 011
EPBX (0522) 2451200
Fax (0522) 2458500

Government of India-Ministry of Railways
Research Designs & Standards Organisation
Lucknow - 226 011
DID (0522) 2450115
DID (0522) 2465310



FINAL SPEED CERTIFICATE FOR OPERATION

No.	MC/SPIC/US/ICF	Date	09.10.2020
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महाप्रबन्धक (इंजीनियरिंग),

1. मध्य रेलवे, छत्रपति शिवाजी महाराज टर्मिनस, मुम्बई- 400 001
2. पूर्व रेलवे, फेयरली प्लेस, कोलकाता- 700 001
3. उत्तर रेलवे, बडौदा हाऊस, नई दिल्ली- 110 001
4. पूर्वोत्तर रेलवे, गोरखपुर- 273 001
5. पूर्वोत्तर फ्रन्टियर रेलवे, मालीगँव, गुवाहाटी- 781 011
6. दक्षिण रेलवे, एनेक्सी, पार्कटाऊन, चेन्नई- 600 003
7. दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद- 500 071
8. दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता- 700 043
9. पश्चिम रेलवे, चर्चगेट, मुम्बई- 400020
10. उत्तर मध्य रेलवे, प्रयागराज - 211 011
11. उत्तर पश्चिम रेलवे, जयपुर- 302 006
12. पूर्व मध्य रेलवे, हाजीपुर- 844 101
13. पूर्व तट रेलवे, रेलवे कॉम्पलेक्स, भुवनेश्वर- 751 023
14. दक्षिण पश्चिम रेलवे, हुबली- 580 023
15. पश्चिम मध्य रेलवे, जबलपुर- 482 001
16. दक्षिण पूर्व मध्य रेलवे, बिलासपुर- 495 004

Sub: Final speed certificate for operation of Air Conditioned Self-Propelled Inspection Car (SPICAC) up to a maximum speed of 105 kmph on track maintained as per standards specified under para 522 of Indian Railways Permanent Way manual, June-2020.

Ref: ICF letter no. MD/D/MEMU/186A, dated 20.11.2018

IMPORTANT PARAMETERS RELATED TO AIR CONDITIONED SELF-PROPELLED INSPECTION CAR (SPICAC)

Type	Final / Provisional / Oscillation Trial / COCR/ Movement and Oscillation/ Mock Trial	Final operation	Validity/ Period or Permanent	IR / Sectional	Permanent / IR
Stock Name	Air Conditioned Self-propelled Inspection Car (SPICAC)	Designed Axle Load	20.32 t	Operational Axle Load (T)	14.62t

GA Drg. No., Transportation code, Tare weight & Gross weight of coaches of OHE Car						
SN.	Group	Type of coach	Layout Drawing no.	Transportation code	Tare weight (T)	Gross Weight (T)
1.	Inspection Car	Air Conditioned self-propelled Inspection Car (SPICAC)	ICF drawing no. SPICAC-9-0-001.	DMU/SPIC/AC	55.70t	58.50t

Bogie Arrgt. Drg./ Suspension Arrgt. Drg.			
SN.	Group	Type of coach	Bogie General Arrangement Drawing no.
1	Self-Propelled Inspection Car	Air Conditioned self-propelled Inspection Car (SPICAC).	DMU/DPC10-0-0-001

Bogie Arrgt. (Fabricated/ Casted)	Fabricated	Gauge	BG
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Type of Bogie	HHP DMU ICF type Bogie	Type of Coupler	Tight – lock CBC with transition coupler.	Wheel Dia. (mm)	New 952 mm	Worn 877 mm
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Rake / Train consist for Operation	One Air Conditioned self-propelled Inspection Car (SPICAC).
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Max. Operative Speed	Empty	105 kmph	Loaded	105 kmph
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1.0 INTRODUCTION

1.1	The purpose of Air Conditioned Self-Propelled Inspection Car (SPICAC) is to avoid Locomotive hauled Inspection Carriages and thereby it gives flexibility, reduces haulage expenditure and improves asset utilization.
1.2	<p>Salient feature of rolling stock are as follows:</p> <ul style="list-style-type: none"> (i) Fully air conditioned self-propelled coach. (ii) Profiled nose cone on both ends with driver's desk. (iii) Rubber flooring. (iv) Interior paneling with ACP. (v) CCTV camera on front of the coach for viewing the track. (vi) GPS based PIS/PAS with digital speed indication. (vii) Vacuum assisted bio-toilet with touch free fitting.

1.3	With a view to assess the speed potential, riding quality and stability of SPICAC, detailed oscillation trial was conducted up a maximum test speed of 115 kmph over New Morinda - Sanehwal (NMDA - SNL) section of Northern Railway on track
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	maintained as per standards specified under para 522 of Indian Railways Permanent Way manual, June-2020. The results as contained in RDSO Report No. RDSO/2020/TG/MT- 1710 /F Rev. 0, Amendment – Nil, dated 17.08.2020 indicate satisfactory riding characteristics in detailed as well as long confirmatory run up to a test speed of 115 kmph in empty & loaded Inflated condition and 70 kmph in empty & loaded deflated condition respectively.														
1.4	<p>With a view to assess the emergency braking distance (EBD) of SPICAC, the Emergency Braking Distance (EBD) trial was conducted up to a maximum test speed of 105 kmph i.e, service speed (loaded dry/ wet rail) over New Morinda - Sanehwal (NMDA - SNL) section of Northern Railway on track maintained as per standards specified under para 522 of Indian Railways Permanent Way Manual, June-2020. The results are contained in RDSO report no. RDSO/2020/TG/MT-1711 /F Rev. 0, Amendment – Nil, dated 17.08.2020. Based on the results, the emergency braking distance (EBD) is tabulated below: -</p> <table border="1"> <thead> <tr> <th rowspan="2">S. No.</th> <th rowspan="2">Mode of brake application</th> <th>In dry rail condition</th> <th>In wet rail condition</th> </tr> <tr> <th>Average braking Distance (in meters)</th> <th>Average braking Distance (in meters)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Full Brake application through SA-9 brake handle.</td> <td>551</td> <td>573</td> </tr> <tr> <td>2.</td> <td>Emergency brake application through A-9 brake handle.</td> <td>567</td> <td>595</td> </tr> </tbody> </table>	S. No.	Mode of brake application	In dry rail condition	In wet rail condition	Average braking Distance (in meters)	Average braking Distance (in meters)	1.	Full Brake application through SA-9 brake handle.	551	573	2.	Emergency brake application through A-9 brake handle.	567	595
S. No.	Mode of brake application			In dry rail condition	In wet rail condition										
		Average braking Distance (in meters)	Average braking Distance (in meters)												
1.	Full Brake application through SA-9 brake handle.	551	573												
2.	Emergency brake application through A-9 brake handle.	567	595												
2.0	Based on the above, it is certified that SPICAC is fit for operation up to maximum speed of 105 kmph on track maintained as per standards specified under para 522 of Indian Railways Permanent Way Manual, June-2020 subject to conditions given below:-														

2.1	TRACK:
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2.1.1	The track shall be to a minimum standard of 52 kg rails on sleepers to M+ 7 densities and minimum depth of ballast cushion below sleepers of 250 mm which may consist of at least 100 mm clean and the rest in caked condition, on compacted and stable formation.
2.1.2	For Track maintained to lower standard than that mentioned above, the Chief Engineer shall decide the lower maximum permissible speed on the basis of maintenance condition. In this connection, Railway Board's letter No. 65/WDO/SR/26 dated 19/20.10.1966 may be seen. When the Chief Engineer considers that the road bed is not compacted or there is improper drainage, he may suitably restrict the maximum permissible speed depending on the local conditions.
2.1.3	The maximum permissible speed on curves shall be decided on the basis of existing provisions of the Indian Railways Permanent Way Manual, June-2020.

2.1.4	The welds shall be protected by joggled fish plates as per provisions of USFD Manual, AT welding Manual and other policy instructions of Railway Board. The maintenance of Rails and Rail joints shall be ensured as per provisions of Indian Railways Permanent Way Manual, June- 2020. In addition, wherever condition warrants on account of corrosion on rail/weld collar, wear on rail, cupping of welds etc., necessary precautions shall be taken for fish plating /joggled fish plating.
2.1.5	Zonal Railway may ensure further detailed examination of track as deemed fit based on age cum condition basis, overdue renewal and condition of formation etc. as per provisions of Indian Railways Permanent Way Manual, June 2020 regarding permanent way renewals and may suitably restrict maximum speed of operation based on such examination.

2.2	BRIDGE:
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2.2.1	The clearance refers to Bridges “Standard Spans” with standard design of girders, slabs, pipe culverts, piers and abutments etc. issued by RDSO for BGML, RBG and MBG-1987 Standard Loadings. However, the bearings of span 76.2 m (clear) designed for BGML standard loading as per RDSO’s drawing no.BA-11154 should be strengthened by providing two additional anchor bolts.					
2.2.2	Superstructures and Bearings of “Special Spans” (designed and constructed by Zonal Railways based on site requirements) including all arches and substructure of all bridges (all Standard Spans & Special Spans) are to be examined under the directions of the Chief Bridge Engineer concerned and certified safe with respect to current Indian Railway Standard Codes with up to-date correction slips.					
2.2.3	The above clause has been arrived considering bridges are in physically sound condition. In case the bridges are not in satisfactory physical condition, necessary speed restriction to be imposed by concerned Chief Bridge Engineer of Zonal Railway.					
2.2.4	Locations of bridges on which speed restrictions are imposed shall be notified by the Railways and incorporated in the working timetable.					
2.2.5	The clearance is subject to the following parameters of SPICAC :-					
	Rolling Stock	Maximum operational axle load (t)	Maximum tractive effort/axle (t)	Maximum braking force/axle at rail level in (t)	Maximum CG height from rail level	
	Air Conditioned Self-Propelled Inspection Car (SPIC)	14.62	2.31	1.44	not exceeding 1830 mm	
2.2.6	Other specific restrictions are applicable as mentioned in relevant speed certificates of hauling single/multiple locomotives/attached coaches/wagons issued by RDSO.					

2.3	SIGNALLING:
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2.3.1	Provisions of GR, SR, IRSOD, SEM & all extant instructions issued from time to time as applicable shall be complied with.
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2.4	TRACTION INSTALLATION:
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2.4.1	In 25kV AC traction area, the CEE of the Railway shall have to ensure that the minimum height of Contact Wire and electrical clearances as stipulated in provisions of Chapter V and V-A, Electric Traction 'Schedule of Dimensions of 1676mm Gauge (BG) revised 2004' with latest Addendum & Corrigendum Slips is not violated and strictly followed to ensure its safe running.
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2.4.2	In addition to above, the Chief Electrical Engineer of the concerned Railway may impose any temporary speed restriction on the basis of personal knowledge, experience of the Sectional OHE and the field conditions prevailing on the particular Section.
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2.5	ROLLING STOCK:
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2.5.1	Before starting the operation, PCME of the concerned Railway shall certify track worthiness and safety of the rolling stocks and they shall also ensure proper maintenance of the rolling stocks.
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2.5.2	Brakes of coaches shall be in good working order during the operation.
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2.6	GENERAL:
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2.6.1	All the permanent and temporary speed restrictions in force and those that may be imposed from time to time due to track, bridges, signaling and interlocking etc. shall be observed.
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2.6.2	Air Conditioned Self Propelled Inspection Car (SPICAC) shall not be attached with passenger train.
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2.6.3	There is no infringement of SPICAC with chapter IV (A) of IRSOD (BG), Revised 2004 and its latest addendum correction slip.
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ENCLOSURES: / संलग्नक:

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| (i) | ICF layout drawing no. SPICAC-9-0-001. |
| (ii) | ICF Bogie general arrangement drawing no. DMU/DPC10-0-0-001. |
| (iii) | Railway Board letter no. 87/M(C)/202/10 Vo. (iv) Pt. dated 28.11.2018. |

(Signed)
(वी०के०अग्रवाल)
कार्यकारी निदेशक मानक चालन/शक्ति

प्रतिलिपि:

1. सचिव, {यांत्रिक/विद्युत/इंजीनियरिंग(जी)}, रेलवे बोर्ड, रेल भवन, नईदिल्ली- 110 001
2. मुख्य रेल संरक्षा आयुक्त, अशोक मार्ग, लखनऊ-226 001
3. महाप्रबन्धक (यांत्रिक /विद्युत /परिचालन /संकेत एवं दूरसंचार)
 - (i) मध्य रेलवे, छत्रपति शिवाजी महाराज टर्मिनस, मुम्बई- 400 001
 - (ii) पूर्व रेलवे, फेयरली प्लेस, कोलकाता- 700 001
 - (iii) उत्तर रेलवे, बडौदा हाऊस, नई दिल्ली- 110 001
 - (iv) पूर्वोत्तर रेलवे, गोरखपुर- 273 001
 - (v) पूर्वोत्तर फ्रन्टियर रेलवे, मालीगाँव, गुवाहाटी- 781 011
 - (vi) दक्षिण रेलवे, एनेक्सी, पार्कटाऊन, चेन्नई- 600 003
 - (vii) दक्षिण मध्य रेलवे, रेल निलायम, सिकन्दराबाद- 500 071
 - (viii) दक्षिण पूर्व रेलवे, गार्डनरीच, कोलकाता- 700 043
 - (ix) पश्चिम रेलवे, चर्चगेट, मुम्बई- 400020
 - (x) उत्तर मध्य रेलवे, प्रयागराज - 211 011
 - (xi) उत्तर पश्चिम रेलवे, जयपुर- 302 006
 - (xii) पूर्व मध्य रेलवे, हाजीपुर- 844 101
 - (xiii) पूर्व तट रेलवे, रेलवे कॉम्प्लेक्स, भुवनेश्वर- 751 023
 - (xiv) दक्षिण पश्चिम रेलवे, हुबली- 580 023
 - (xv) पश्चिम मध्य रेलवे, जबलपुर- 482 001
 - (xvi) दक्षिण पूर्व मध्य रेलवे, बिलासपुर- 495 004
4. मुख्य यांत्रिक अभियंता, सवारी डिब्बा कारखाना, पैरम्बूर, चेन्नई-600 038
5. प्रबन्ध निदेशक, कोंकण रेलवे कारपोरेशन, बेलापुर भवन, नवी मुम्बई-400 014
6. प्रबन्ध निदेशक, डेडिकेटेड फ्रेट कॉरिडोर कारपोरेशन ऑफ इंडिया लिमिटेड, नई दिल्ली -110 001

ENCLOSURES: / संलग्नक:

- (i) ICF layout drawing no. SPICAC-9-0-001.
- (ii) ICF Bogie general arrangement drawing no. DMU/DPC10-0-0-001.
- (iii) Railway Board letter no. 87/M(C)/202/10 Vo. (iv) Pt. dated 28.11.2018.

(वी०के०अग्रवाल)
कार्यकारी निदेशक मानक/चालन शक्ति