

Signal and Telecom

Signalling:

Advanced Signalling Systems viz., complete track circuiting, Multiple Aspect Colour Light Signalling (MACLS), Panel/Route Relay/Electronic Interlocking, Last Vehicle Check by Axle Counter are deployed on IR for safe and efficient train control and optimum utilization of line capacity. A major thrust has been given for provision of LED based signals, track circuiting and replacement of signalling gears at block stations. On Board Train Protection System, Train Management System etc., have also been introduced on IR.

The progress of deployment of various signalling devices as on March 31, 2012 vis-à-vis last year is as follows:

Installation	As on 31.3.2011	As on 31.3.2012
Panel Interlocking (No. of stations)	4,000	4,079
Electronic Interlocking (No. of stations)	453	535
Route Relay Interlocking (No. of stations)	251	257
LED Lit Signals (No. of stations)	4,472	4,814
Data Loggers (No. of stations)	4,348	4,773
Colour Light Signalling (No. of stations)	5,278	5,391
Last Vehicle Check by Axle Counters (No. of Block Sections)	3,009	3,410
Track Circuiting (No. of locations)	28,372	29,201
Automatic Block Signalling (Route kilometres)	2,140	2,286
Intermediate Block Signalling (No. of Block Sections)	373	397
Interlocked Level Crossings Gates (Nos.)	9,777	9,983
On Board Train Protection System (Route kilometres)	328	528
Train Management System (No. of Sections)	1	1

To attain self-sufficiency in meeting the increased demand for electronic system of signalling, IR's Signal Workshops on Central, Eastern, North Eastern, Southern and South Central Railways have been manufacturing items like Axle-Counters, Electric Point Machines, various types of relays, Tokenless Block Instruments, etc.

Telecommunication:

Telecommunication plays an important role in train control, operation and safety. With the rapid growth in telecommunication technology, IR has decided to go for the state-of-the-art nationwide telecom network for meeting its communication needs and earning revenue by exploiting surplus capacity commercially. With this objective, RailTel, a Railways' Public Sector Undertaking was formed in September, 2000.

As on 31st March 2012, 40,332 Route Kilometres of Optical Fibre Cable has been commissioned that is carrying Gigabits of traffic. Railway Control Communication which is quintessential for train operation and control is also being transferred to OFC system. Till date control communication on 37,389 Route Kilometres has been shifted on OFC system. RailTel is significantly contributing in building National Knowledge Network. It is also planning to provide Broadband connectivity to the Panchayats through OFC network.

IR has decided to adopt Global System of Mobile Communication – Railways (GSM-R) based Mobile Train Radio communication. It has already been provided on 1,710 route kilometres and is being extended in other sections.

IR has established its own Satellite hub to facilitate connectivity for the remote Freight Operations Information System (FOIS) locations and Unreserved Ticketing System (UTS), Disaster Management System as well as for other critical communication system. Besides IR works uses 13,116 data circuits that power its various data and voice networks across the country. IR has also established its Multi-Protocol Label Switching

(MPLS) based Next Generation Networks (NGN) for voice traffic which has been used to interconnect more than 100 exchanges of railways carrying the administrative voice traffic. Common User Group (CUG) mobile phones have also been hired to enable communication while on move to enhance safety, reliability and productivity. IR is also using 1.2 lakh VHF walkie-talkies sets to ensure safety and enhance reliability.

IR has also started the Real Time Train Information System where in the train running information's are being made available to public on a real time basis. Now this project covers 36 trains and work is in progress to cover all trains with this facility.

With a view to provide improved passenger amenities, Train Information Boards have been provided at 1,090 stations, Public Address System at 3,865 stations and Coach Guidance System at 527 stations.

The progress of installation of telecom equipment on IR is given below:

Installation	As on 31.3.2011	As on 31.3.2012
Railway Telephone Subscribers Lines (Nos)	3,54,493	3,62,551
Number of Control Sections provided with Dual Tone Multiple Frequency (DTMF) control equipment	316	316
Control communication through wireless (18 GHz) (route kilometres)	160	74
Mobile Train Radio Communication System (route kilometres)	1,705	1,710
(a) GSM-R based	345	53
(b) TETRA (Terrestrial Trunked Radio) based		
Optical Fibre Cable Communication (OFC) system for control communication (route kilometres)	37,708	40,332
Quad Cable (route kilometers)	45,512	47,181
Digital Microwave (7GHz) (route kilometres)	6,331	5,937

Installation

	As on 31.3.2011	As on 31.3.2012
Public Address System (No. of stations)	3,865	4,098
Train Display Boards (No. of stations)	1,090	1,090
Coach Guidance System (No. of stations)	480	527
RE Cable (route kilometres)	2,954	2,445
BSNL OH (route kilometres)	3,934	3,604
Railway OH (route kilometres)	2,946	2,249
Very High Frequency Sets		
(a) 5 Watt sets (Hand Held) (Nos.)	1,02,185	1,20,218
(b) 25 Watt sets (At Stations) (Nos.)	7,336	8,581
Very Small Aperture Terminal (V SAT) (Nos.)	1,010	1,196
Railnet Circuits (Nos.)	358	342
Unreserved Ticket System/Passenger Reservation System Circuits (No. of stations)	8,259	8,556
Freight Operation Information System Circuits (No. of stations)	1,797	1,789
Next Generation Networks & Exchange Circuits (No. of stations)	1,992	2,429