

GOVERNMENT OF INDIA(BHARAT SARKAR)
MINISTRY OF RAILWAYS(RAIL MANTRALAYA)
RAILWAY BOARD

E(MPP)/2009/3/14

RBE NO. 99/09

New Delhi 5th June'09

The General Managers
All Indian Railways
(as per mailing list)

Subject: Revised Training Program for Assistant Loco Pilots

The Railway Board had set up a Director level Committee,

- (i) to review the curriculum and duration of the initial/induction training of ALP (Electrical & Mechanical) and,
- (ii) to redesign the stage-wise training modules by properly sequencing the theoretical and practical training inputs.

The Report of the Committee has been accepted by the Board (MM, ML, MT & MS) and the decisions based on its recommendations are as under:

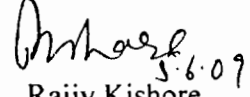
1. All ALPs need not be given dual traction training. On divisions where the territories of Diesel and Electric locos operations are well demarcated, dual traction training need not be imparted. It should be imparted only on Divisions which are going through a transition and the decision in this regard may be taken by the General Manager based on the need for dual traction.
2. The total duration of training in single traction is recommended for 103 working days. For dual traction, a conversion training may be conducted for 48 working days (38 days theoretical training and examination + 10 days of footplate), which would make the training programme 151 days long.

The revised Training module for each stage of the training program is enclosed at **Annexure "A"**. Detailed modules for each training centre are given at **Annexure "B" to "D"**.

3. Railways are required to implement this revised training schedule for the newly selected ALPs who have not yet joined the training course. For the existing ALPs undergoing training at different stages, the CME/CEE of the zonal railway may examine the feasibility of introducing the revised schedule. If the same is found feasible, GM's approval should be taken for modifying the schedule of under – training ALPs. A feedback in this regard should be sent to the Board.

4. The Committee has recommended augmentation of certain infrastructural facilities and manpower resources at the training centres for ensuring improved training being imparted to the trainees. These are given in **Annexures "E"** and the Railways should organize these inputs on priority basis. The modalities for implementation of the revised training program is given at **Annexure "F"**.

Hindi version will follow


5.6.09
Rajiv Kishore
Director(MPP)

DA: Annexures "A" TO "F": 18 Pages.

No. E(MPP)2009/3/14

New Delhi 5 th June '09

Copy to :-

1. The General Secretary, NFIR, 3 Chelmsford Road, New Delhi , for information with 35 spares.
2. The General Secretary, AIRF, 4 State Entry Road, New Delhi, for information with 35 spares.
3. The secretary General , FROA, Room No. 256-A, Rail Bhawan, for information with 5 spares.
4. The Secretary General , IRPOF, Room No. 268, Rail Bhwan, New Delhi , for information with 5 spares.
5. All Members, Departmental Council and National Council and Secretary Staff side National Council, 13-C Ferozeshah Road, New Delhi (90 spares).



For Secretary, Railway Board.

.....3/-

ANNEXURE "A"
**REVISED TRAINING PROGRAM: TRAINING MODULES WITH
DURATION AND LOCATION**

S.No	Training Module	Duration	Location
1	Initial/General Training	3 days	First training centre
2	Transportation Training. Demonstration on Fire Fighting & First aid	24 days	ZRTI
3	Basic Elec./Mech. Engg.; C&W; Lobby/Control / FOIS/ CMS/etc.	14 days	Respective Centre
4	Traction specific Core subject matter	36 days	Respective Centre
5	Foot Plate Training interspersed with Training at (3) & (4) above.	20 days min 2500kms	Respective Centre
6	Review and exam	6 days	Respective Centre
	Total (Single Traction)	103 days	
7	Conversion Training	36 days	Other training centre
8	Foot Plate Training for other traction after conversion	10 days min 1250 kms	Other training centre
9	Review and exam	2 days	Other training centre
	Total (Dual Traction)	151 days	

1. Common Training will include the Basics of Mechanical and Electrical Engg, familiarization with relevant aspects of Coaches and Wagon for tackling problems on run, Control office, Lobby including FOIS, CMS, etc.

2. Learning Road will be given in the concerned division as per specific requirement of the division before putting them independent on line as ALP.

3. During footplate training ALP will be booked on freight/passenger trains alongwith the train crew so that he gets a feel of the rolling stock, signals and P-way etc. Proper record regarding 2500 Km. of footplate will be maintained by the training school. This training should be conducted in suitable spells when the core subject matter is being taught which will also help in their understanding of the class room teaching.

ANNEXURE "B"**REVISED TRAINING MODULE FOR ASSISTANT LOCO PILOT (DIESEL TRACTION)****Stage: Induction/Lateral Induction**

Duration: 103 working days

S.No	Description	Duration
1	Indian Railways- General Information, Fire Fighting and First-aid	3 days
2	Transportation Training at ZRTI	24 days
3	Basics of Mech. and Elect. Engg, Familiarization with relevant aspect of coaches and wagons for tackling problem on run and Control & Crew Lobby training	14 days
4	Familiarization with the Lay out and working of various Types of loco/sub-system/sub-assemblies and related trouble shooting. Locomotive operating instructions ,Safety items of loco and safety equipment provided to running staff and on loco, Examination of locomotive while turning out from Shed taking over from the previous crew including Familiarization with Repair book, Trip Card, Joint Guard and Loco Pilot Report	36 days
5	Foot Plate Training under Loco Inspector/Training instructor	20 days
6	Review and exam	6 days
	Total	103 days

Stage: Conversion course (ALP Elect. to ALP Diesel)

Duration: 48 working days

S.No	Description	Duration
1	Familiarization with the Lay out and working of various Types of loco/sub-system/sub-assemblies and related trouble shooting. Locomotive operating instructions ,Safety items of loco and safety equipment provided to running staff and on loco, Examination of locomotive while turning out from Shed taking over from the previous crew including Familiarization with Repair book, Trip Card, Joint Guard and Loco Pilot Report	36 days
2	Foot Plate Training under Loco Inspector/Training instructor	10 days
3	Review and exam	2 days
	Total	48 days

Note:

1. Conversion Training will exclude the Basics of Mechanical and Electrical engg. , Familiarization with relevant aspects of Coaches and Wagon for tackling problems on run, Common items of Brake system and bogie for both the tractions
2. Learning Road will be given in the concerned division as per specific requirement of the division before putting them independent on line as ALP.

ANNEXURE "B" contd.

Duration 14 Days

i) Basics of Mechanical & Electrical Engg.(3 days)

- **Basic Mech. Engg-**What is engine, Types of Engines- (i) External Combustion and (ii) Internal Combustion. Internal Combustion Engines – (i) Spark ignition (Petrol Engine) and (ii) Compression Ignition (Diesel Engine), Working principle of Diesel Engine. Two stroke engines, four stroke engine. Parts of engine- Engine block, crank case, crank shaft, cam shaft, cylinder liner, crank case cover, fuel control shaft, water jackets
- **Basic Electricity** - Electrical symbols, Electric Circuits, open circuit, close circuit, short circuit, Voltage, Current Resistance, Ohms law, Series and Parallel Connections, Capacitor, Conductor/Insulator, Ammeters, Voltmeters, Protective devices - fuses, Relays and Contactors, Batteries, DC motor, AC motor, Motor in series/parallel, speed control, Generators/Alternator and Motor working principle, Converter/rectifier and inverter – Diode, GTO, IGBT etc. Precautions to be taken with various voltages of electricity.

ii) Familiarization with relevant aspects of Coaches and Wagon for tackling problems on run (6 days)

1. Different types of Air brake stock BOXN, BCN, BTPN, BRN etc and Air brake coaches on M/E trains, description of fuel oil tanks(BG & MG).
2. Equipment provided in Air brake stock, Brake pipe, feed pipe, AUX and control reservoir, Distributor valve Brake cylinder, their identification describing air charging in train, explain single pipe/twin pipe working.
3. Slack Adjuster Angle cock, their position loaded/Empty lever, function of various equipment
4. Physical observation of various equipment in Air brake stock.
5. Releasing of Wagons when brakes are jammed. Adjusting slack adjuster.
6. Method of isolation of distributor valves when brakes are not getting released or the DB valve in defective.
7. Testing of continuity of BP pressure from loco to BVG before starting.
8. Practical demonstration of continuity testing and releasing and isolation and drill
9. Testing and detection of leakage in loco and load.
10. Shunting of Air brake load, attachment and detachment of air brake wagons.
11. Time lag between the time of building BP pressure and releasing of brake in all the wagons after the application. Need for the time lags before notching up to avoid train parting.
12. Practical working in Air brake stock, changing of BP/P Pipes.
13. Releasing and isolation in Air brake coaches, detection of leakage.
14. Vacuum brake system, Equipment provided in Vac brake stock. Brake cylinder brake rigging in wagon, releasing of wagon, detection of leakage, connecting Hose pipe, changing of Hose pipe, Doshier clapped valves etc. Isolation of defective cylinder.
15. Practical demonstration and drill of releasing brakes.

ANNEXURE "B" contd.

16. Understanding the salient features of Air Brake system, independent Air Brake application & release(SA9), explain VA1B Control valve/VA1 release valve/28 VB Control valve/MU2B valve & F1 selector valve. IRAB System and BMBC System
17. Understanding vacuum creation, destruction & recreation, conjunction working, conducting vacuum efficiency test, understand MU unit air brake application & release/C2 relay valve.

iii) Crew Lobby and control office training (4 days)

Crew Lobby

1. Study of different register maintained under Crew Controller. Road Register, caution order Register, Equipment isolation Register, Speedometer defect Register, punctuality register, Safety folder speed restriction board, Safety Bulletin. Abnormality Register Importance of LRD register, vision register. Register of medical test, refresher course attended, Safety camp attended, etc/
2. Various standing instruction/circulars issued regarding safety and loco working.
3. Booking of crew, preparation of chart.
4. Breathalyzer test, signing on duty and OFF duty register.
5. Crew Management System

Control Office

1. Study of various registers maintained in PRC/TLC Room, Section wise register for goods train, passenger train, PRC/TLC logbook, etc. Maintaining various records regarding schedule inspection carried out, overdue, etc.
2. Loco Pilot report to PRC/TLC regarding loco failure punctuality loss and other abnormalities etc through various means of communication e.g. Phones, VHF set etc.
3. Crew link, loco link, withdrawing locos for schedule inspection, unscheduled repairs liaison with traffic.
4. Booked speed, Max speed, sectional speed preparation of various statistical details GTKM for goods or passenger train, loco ineffective hourly statistical, calculation of Ave. speed.
5. Reading of control graphs preparation of loco graph.
6. Familiarization with ICMS and FOIS

TRANSPORTATION TRAINING FOR ASSISTANT LOCO PILOTS

DESCRIPTION

Transportation Training at ZRTI

DURATION

24 Days

COURSE CONTENTS

1. Legal force of General and Subsidiary Rules.
2. Familiarization with various terminologies used in G & SR.
3. Types of signals - fixed signals, hand signals, detonating signals, shunt signals, Lower Quadrant, Upper Quadrant and Colour Light Signals, approach and departure signals, automatic and permissive signals, co-acting signals, repeating signals, IBS signal, Trap and Point Indicators, catch & slip siding

Working of Signals and Points, Interlocking, Isolation, Authority to pass defective signals.

Conditions for taking off outer signal, warner signal, home signal, last stop signal, gate signal, calling on signal, shunt signals

4. Classification of Stations, Systems of working - Absolute Block System, Automatic Block System, One Train Only System.

5. Working of Trains, Engineering Restrictions and Caution Orders, Indicators of permanent and temporary speed restrictions, Exchange of signals, whistle codes.

6. Rules for shunting at different class of stations, Rules for single line working on double line sections, Rules for working trains in the event of failure of communication on single and double line section.

7. Various forms used in train and shunting operations.

8. Various speed limits under different situations such as on facing points, while running through, while pushing trains, while engine running tender foremost, during failure of head lights, during thick and foggy weather.

9. Special precautions while working in Ghat Sections and in Over Head Electrical Sections.

10. Protection of Train during Accidents and when stopped in midsection, Action in case of Fire, Train Parting and Alarm Chain Pulling, Safe train running.

11. Basics of P-Way and S&T systems (1 day)

12. Fire Fighting and First Aid incl. Practical Demonstration (1 day)

**REVISED TRAINING MODULE FOR ASSISTANT LOCO PILOT
(ELECTRICAL TRACTION)**

STAGE: Induction/Lateral Induction for Assistant Loco Pilot(Elect)

DURATION : 103 days (17 weeks)

S. no.	DESCRIPTION	DURATION
1	Indian Railways - General Information, Fire-Fighting & First Aid	3 days
2	Basics of Electrical & Mechanical engineering, Carriage & Wagon and Control & Lobby working	14 days
3	Familiarization with OHE and Lay out & working of various types of electric loco/sub-system /sub- assemblies Including SIV, Microprocessor and three phase locos.	24 days
4	Electric Locomotives operating instructions and trouble shooting	9 days
5	Safety items of loco to be checked while turning out loco from shed, items to be checked while taking over charge from incoming crew at starting station / yard and enroute.	3 days
6	Transportation Training At ZTC	24 days
8	Foot-plate training under Loco Inspector / Instructor	20 days
10	Examination	6 days
TOTAL		103 days (17 Wks)

STAGE : Conversion course from Assistant Loco Pilot (Diesel) to Assistant Loco Pilot(Elect.)

DURATION : 48 days (8 weeks)

S. no.	DESCRIPTION	DURATION
1	Familiarization with OHE and Lay out & working of various types of electric loco/sub-system /sub- assemblies including SIV, Microprocessor and three phase locos.	28 days
2	Locomotive operating instructions and trouble shooting	6 days
3	Safety items of loco to be checked while turning out loco from shed, items to be checked while taking over charge from incoming crew.	2 day
4	Foot-plate training under Loco Inspector / Instructor	10 days
5	Examination	2 days
TOTAL		48 days (8 Weeks)

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Basics of Electrical & Mechanical engineering, Carriage & Wagon and Control & Lobby working.

CONTENTS

- **Basic Diesel Engine** - What is engine, Types of Engines- (i) External Combustion and (ii) Internal Combustion. Internal Combustion Engines – (i) Spark ignition (Petrol Engine) and (ii) Compression Ignition (Diesel Engine), Working principle of Diesel Engine. Two stroke engines, four stroke engine. Parts of engine- Engine block, crank case, crank shaft, cam shaft, cylinder liner, crank case cover, fuel control shaft, water jackets
- **Basic Electricity** - Electrical symbols, Electric Circuits, open circuit, close circuit, short circuit, Voltage, Current Resistance, Ohms law, Series and Parallel Connections, Capacitor, Conductor/Insulator, Ammeters, Voltmeters, Protective devices - fuses, Relays and Contactors, Batteries, DC motor, AC motor, Motor in series/parallel, speed control, Generators/Alternator and Motor working principle, Converter/rectifier and inverter – Diode, GTO, IGBT etc. Precautions to be taken with various voltages of electricity.
- **Carriage & Wagons** - Different types of Coaches & wagons.
 - Air Brake - Brake pipe, Feed pipe, Aux and control reservoir, Distributor valve working, Brake cylinder working, air charging in train, single pipe/twin pipe working, Slack Adjuster, Angle cock, position of Empty Loaded device.
Lesson, demonstration and practical drill on building / re-building of pressure and time taken thereof in train, train parting, releasing of brakes, hand brake working, adjusting slack adjuster, isolation of distributor valves, changing of BP / FP pipe, ACP device resetting, testing of continuity and measurement of air leakage in load.
 - Vacuum Brake – Vacuum train pipe, Direct air admission valve, working of Vacuum brake cylinder, Brake cylinder brake rigging in wagon, releasing of wagon, detection of leakage, connecting Hose pipe, changing of Hose pipe, clappet valves resetting etc. Isolation of defective Vacuum brake cylinder.
CBC working, TC working and attachment and detachment of wagons.
Items to be checked during GDR.
- **Working of Lobby** – Various registers maintained under Crew Controller – Sign On / Sign Off registers, Caution order Register, Abnormality reporting – Signal defect, P Way defect & loco defect registers, Safety Bulletin, Notice book.
Booking of crew, Breathalyzer test, Crew Management System (CMS) working, Speed restriction board.

ANNEXURE "D" contd.

- **Communication & working of Control** - Reporting of failures & abnormalities on line through various phones, VHF sets etc. Controlling of trains by traffic controller – charting.

Duration : 24 Days

Familiarization with OHE and Lay out & working of various types of electric loco/sub-system /sub- assemblies including SIV, Microprocessor and three phase locos.

CONTENTS

- Study of various OHE components - Cantilever assembly, Catenary / contact wire, dropper, crossovers, insulator, Neutral sections, Display boards, bonding, implantation, ATD assembly, AT supply etc. Precautions to be followed on electrified territory.
- Study of EM & EP contactors, line & shunting contactors, CTFs , Reversers, Master controller, their constructional feature including manual operation and wedging etc.
- Protection relays, sequential relays , signaling relays including procedure of manual operation and wedging etc.
- Tap changer and transformer working
- Study of Microprocessor based loco & working during wheel slip and Energy cum speed monitoring system (ESMON) setting of train data / time, reading of energy consumed & regenerated.
- Study of three phase loco, working, operation, reading of DDS and troubleshooting of important equipments like parking brake, VCD, Emergency push button etc.
- Study of ARNO converter / SIV. Various types of auxiliary motors , AC / DC traction motors their constructional features, cooling system, mounting arrangement. Working with SIV external fault condition
- Various type of bogies and brake rigging, Gear boxes / cases and points of lubrication
- Study of location of compressor, baby compressor, Air dryer and the pneumatic including circuit working, emergency brake application.
- Loco roof equipment like Pantograph, VCB/DJ and its circuit working, Roof bar, earthing of pantograph including HOM etc.
- Various schedule inspection of loco, IA, IB and IC inspection. Common faults in the loco and location of their faults.

Locomotive operating instructions and trouble shooting

CONTENTS

- Duties of Assistant Loco Pilot as per ACTM. Brief of ACTM & other manuals.
- Testing of capability of compressor & pressure leakages in loco and testing of loco brakes. Use of emergency brakes.
- Procedure for passing neutral section , corridor inspection by Asstt. loco pilots – checking working of various auxiliaries, oil levels , abnormal sounds or temperature , targets of protective relays etc after passing neutral section. Watch on the Ammeter , Voltmeter, Speedometer and pneumatic gauges on run.
- Keeping constant lookout of the track looking back in curves for smooth working of train, any abnormal sound etc. and informing TLC for any irregularity. Reading of caution orders, B.P. certificates and following instruction given in C/order.
- Correct method of calling of signal and repeating, exchanging all right with Guard and station staff. Safety precaution to be observed on line.
- Changing of cab, manual operation of GR, MU operation.
- Wheel slipping and use of sanders.
- Procedure for stopping a train on a rising gradient.. Controlling of heavy loaded train on DN gradients.
- Parting of train on run - causes and steps for avoiding parting of train. Action to be taken in case of train parting on run.
- Protection of train and track in case of accident.
- Checking of stable load.
- Procedure for attaching dead locos on train and accompanying the dead loco by ALP. Stabling of loco in yards/ sheds, use of hand brake / parking brake etc.
- Procedure for working double headed train.
- Working of train when Headlight is defective, horn not working, and pilot lamps not working.
- Working during abnormal conditions like Panto broken / entangled, OHE hanging, flooded track, foggy weather, wheel floating, fire / smoke in loco etc.
- Trouble shooting - DJ tripping with relay targets, Aux. machine failures, Traction motor failures, Traction failure, pneumatic failures,

ANNEXURE "D" contd.

- Bogie problem, miscellaneous failures. Working with different equipment isolated condition.

Duration : 3 Days

Safety items of loco to be checked while turning out loco from shed, items to be checked while taking over charge from incoming crew

CONTENTS

- Checking of Safety items like Head light , Flasher Light, Marker light, Horns, Wipers, Hand brake / parking brake, Sanders, Air dryer, Cattle guard , Rail Guard, Side Buffers, CBC & Transition couplings, under frame equipment including brake rigging , gear cases & battery boxes.
- Fire extinguisher and Wooden wedges location in the loco and their use.
- Safety precaution before energizing the loco, Safety precaution before entering the HT compartment of loco, Safety precaution before carrying out roof inspection of loco, use of ladder provided in the loco, Locating emergency switches of loco, spare fuses.

AUGMENTING RESOURCES AT TRAINING CENTRES

MANPOWER RESOURCES:

1. Medically decategorised running staff may be drafted to act as Demonstrators/Escorts at the Training centre by creating supernumerary posts, who would escort the trainees on their field visits and during foot-plating. This would meet both the objectives of immediate utilization of medically decategorised running staff as well as strengthening the trainers' base at the training centres. Such a measure would also fruitfully utilize the services of the drivers who have vast experiences in their profession but are not too useful in other sedentary jobs where they are absorbed for want of a better option. The status of the drivers should be in the nature of supernumerary post, which is personal to the individual. The prospective candidates might find it attractive as it would give them a choice of pursuing a profession which suits their temperament and would not have to wait for alternate absorption in a job which might not be suitable as per their capabilities and interest.

The selection of such demonstrators should be done by a committee of three officers as at present, though it would not entitle them to any other monetary benefit like teaching allowance etc.

2. Another way to augment the supply of such instructors is by authorizing the zonal Railways to draft them from senior drivers with known teaching skills for meeting temporary shortfall of training instructors when the ALPs report for training. The drivers would return back to their field duties once the requirement is over. The Zonal Railways may maintain a panel of such drivers.

3. It is necessary that the strength of loco inspectors/instructors is increased in the training centres and a ratio of 1 instructor for every 10 ALPs to be trained should be maintained during the field trips of the ALPs.

4. Loco Inspectors may be allotted for ALPs on the same lines as they are allotted for Loco pilots for monitoring their work and also to counsel the pilots on regular basis.

5. The training instructors should themselves be given "training for trainers" so that they can be equipped to impart this training to the newly recruited ALP's.

INFRASTRUCTURAL FACILITIES

1. One Training School of each department should be nominated for development of model modules using audio-visual and simulation training.

2. The infrastructural facilities should be improved especially by way of providing modern teaching aids and a healthy environment in class rooms and hostel.

3. Training centres should be provided with FOIS & COIS terminals so that they can impart training on these topics.

4. Provision of convenient transport facility for ferrying the trainees should be arranged by hiring of private vehicles by the Principal.

5. Suitable study material must be made available before every class room session, which should be legible and in vernacular language as far as possible. Course content development is an integral part of any sound training program.

ANNEXURE "F"

MODALITIES FOR IMPLEMENTING THE REVISED TRAINING PROGRAM FOR ALPs

1. The revised Training content has been structured as separate modules which are training centre specific. The training centres would have the leeway to deliver the topics as per their logistical support.
2. Candidates after their recruitment through RRBs and selection in departmental examination report for the training at Hqr. Office.
3. The railways have three options for deputing the trainees for training, as all the trainees who number some 800 to 900 cannot be deputed for a common training programme. The trainees can either be sent to ETC, DTTC or ZRTI where they are given inputs as per training capsule designed for that training centre.
4. All the 3 training centres should have a short introductory module for 3 days on familiarization of Railways, Firefighting, First aid and duties of ALPs, with which the training should be initiated. For the trainees who are deputed first to the ZRTI the content for the introductory module would have to be slightly modified as demonstration part of these contents are also included in the core subject of ZRTI.
5. The trainees should not be deputed for divisional attachment as it does not lead to a formal initiation of the trainees to the training programme and leads to demotivation.
6. The headquarter office should chalk out the plan in advance as to how the trainees would move from one training location to another.
7. Each of the training centres would also develop its own modality for examining the candidates, which should be in the nature of continuous evaluation through short tests consisting of application based training instead of excessive theoretical concepts. The evaluation should consist of weekly examinations based on modules covered in the week the score of which should be part of the total evaluation process. In case a candidate fails to clear a module he should be allowed to progress with the rider that he should clear the module along with the next module examination. This will prevent the present system whereby when a candidate fails he has to repeat the entire

training program, which puts a heavy cost in terms of lost manpower availability. .

8. On successful completion of training the trainees report for duty at their allotted Division, where they may be put through the Learning Road for required number of days depending on the specific needs of the division.

9. In case some trainee ALPs are found wanting in some area during learning road (LR) then they may be given extended LR and footplate practice before putting them on actual post.

10. The transportation training of SR and GR at the ZRTI may be rationalized from the user point of view with stress on signal and filling up of forms and reduced to 24 days. In due course more computer graphics based content need to be developed at ZRTIs for ALP training, with provision for ample hands on training to be given to the trainees.

11. Sufficient exposure of running loco systems should be given to the trainees for which they should be put on runs with train crew, to help them imbibe the theory better. This would also serve the purpose of footplate training.

11. In case Railways have the need for dual traction trained loco pilots, it may depute the required number of such ALPs for training in the other traction as per approved module.
