

PRASAR BHARATI
DIRECTORATE GENERAL :: ALL INDIA RADIO
P & D UNIT :: AKASHVANI BHAVAN
NEW DELHI-110001

DE (EPM)/CADRE REVIEW/2009

Dated: 13th March 2009

**Sub: Cadre Review in respect of Group "A" , Group "B" , Group "C" & Group "D"
Engineering Staff of All India Radio & Doordarshan**

The Cadre Review Committee constituted for the restructuring of the engineering cadres of All India Radio and Doordarshan has met a number of times under the chairmanship of the undersigned and prepared a Report on the Cadre Review in respect of Group "A" (IBES), Group "B" , Group "C" & Group "D" engineering staff of All India Radio & Doordarshan. The report is enclosed here and posted on the website of All India Radio: www.allindiaradio.org as well as on www.air.org.in . The undersigned shall be grateful if all concerned go through the Report and email their valuable suggestions/comments on the subject to the undersigned on the following email ID: epmdgair@gmail.com within 15 days of the posting of the Report on the AIR website, for incorporating the necessary suggestions/modifications in the Final Report.



(R. K. Singh)

Chief Engineer(Development)
Chairman , Cadre Review Committee

Copy to Member(Personnel)

Prasar Bharati, for kind information

Copy to all the Members of the Cadre Review Committee

Part [A] : Proposal for Cadre Review of Indian Broadcasting(Engineers)Service Group 'A'

About the organization:

Doordarshan is the one of the largest broadcasters in the world. Now almost 90 per cent of population of the country can receive Doordarshan programmes through a network of nearly 1399 terrestrial transmitters. 66 Doordarshan Studios are producing TV software. There are 126 Maintenance Centres spread throughout the country to maintain the broadcast services of hundreds of Low Power and Very Low Power Transmitters. Presently, Doordarshan operates 30 channels – seven All India channels (DD National, DD News, DD Sports, DD Gyandarshan, DD Bharti, DD Rajya Sabha and DD Urdu), eleven Regional Languages Satellite Channels (RLSC), eleven State Networks (SN) and an International channel. DD is also providing multi-channel TV coverage in the country through its free to air DTH service, 'DD-Direct Plus'.

All India Radio is also one of the largest broadcasting organizations of the world. It has a network of 232 broadcasting centres with 149 medium frequency(MW), 54 high frequency (SW) and 171 FM transmitters. The coverage is 91.79% of the area , serving 99.14% of the people in the largest democracy of the world. AIR covers 24 Languages and 146 dialects in home services. In External services, it covers 27 languages; 17 national and 10 foreign languages.

There is a cadre of Indian Broadcasting Engineers Service(I.B.E.S.), which is primarily responsible for planning, design, installation and maintenance of the broadcast infrastructure of Doordarshan and All India Radio. The I.B.E.S. is also responsible for carrying out R&D and training activities. The Indian Broadcasting (Engineers) Service (I.B.E.S.) was constituted in November, 1981. AIR and DD network expanded many fold in eighties and nineties. To cite a few examples : In 1983 television signals were available to just 28% of the population, this had doubled by the end of 1985 and by 1990 over 90% of the population had access to television signals. Such a rapid expansion of television transmitting network in a vast country like India is one of the greatest engineering feats achieved anywhere in the world. All India Radio started its FM service in Chennai in 1977. Today AIR has a network of 171 high power FM Transmitters.

According to the DoPT instructions, its first cadre review was due in 1984 with subsequent reviews every three (3) years. But not even a single cadre review has been done so far whereas the AIR and Doordarshan network has grown many fold. The first ever cadre review proposal, as approved and recommended by the Ministry of Information &

Broadcasting, DoPT and Ministry of Finance was taken up by the Cadre Review Committee in its meeting held on 04.08.1997 under the chairmanship of the then Cabinet Secretary. The committee appreciated the need of the Cadre Review but observed that in view of notification of Prasar Bharati, the cadre review proposal should be looked into by Prasar Bharati. All the engineering officers under IB(E)S cadre & their services in AIR & Doordarshan are fully funded & controlled by the Ministry of I&B, Govt. of India. The cadre review proposal for IB(E)S cadre has been initiated earlier and also discussed among Ministry of I&B, DoPT, Cabinet Committee, etc., but it could not be completed. The matter has also been seen by the Hon'ble CAT and they have given following judgment in this matter already on 16.12.2004:

"Keeping in view the same, it is not disputed at either end that once a decision has been taken to finalize the cadre review with respect to Indian Broadcasting (Engineers) Service, a direction should be issued to implement the same within a reasonable time. Keeping in view the totality of facts and circumstances, it is directed that a decision on the order dated 11.2.05, copy of which has been given to us and to which we have referred to above, should be taken by respondent no. 1 (Union of India) pertaining to the cadre review of IB(E)S within three months of the receipt of the certified copy of the present order which should be communicated to the applicants. O.A. is disposed of."

In spite of the above judgment, no decision on implementation of cadre review has been taken as yet. Implementation of the cadre review is pending for a long time. Cadre Review has already been implemented for Indian Information Service in the same ministry, twice during year 1989 & 2006, but not yet implemented for the IB(E)S cadre. In fact cadre review has been implemented in most of the ministries/departments of the Govt of India, as part of the central services-administrative/structural reforms/restructuring, with the exclusion of I.B.(E).S.

1. Need of the Cadre Review:

- (a) The primary objective of any broadcast organization is to run and maintain broadcast facilities so as to transmit signals of highest broadcast quality to keep the listeners/viewers satisfied with the audio/video quality. A crisp and clear picture or audio is the first priority of a national public service broadcaster. The I.B.E.S. was

constituted in the early eighties to achieve this objective. It has ensured vast expansion of AIR and Doordarshan network. However as the size and complexities of the technical installations grew, the basic structure of the IBES became obsolete and outdated. The present structure is grossly inadequate for inspection, monitoring and maintenance of transmissions and programme generation facilities and there is an urgent need to ensure corrective action for maintaining world class broadcast standards. This alone should be ground enough for a cadre review of the I.B.E.S.

(b) Directions have been issued by the DOPT, Ministry of Personnel, Public Grievances and Pensions, Govt. of India vide OM vide ref. No.I-11019/6/2008-CRD, dated 5th September, 2008 w.r.t. Department of Expenditure (Ministry of Finance) letter vide ref. No.1/1/2008-IC, dated 29th August, 2008 wherein it has been communicated to all the cadre controlling authorities to formulate the proposal of cadre review and send it to DOPT through the concerned Ministry.

(c) Directions have been issued by the Department of Expenditure (Ministry of Finance), Govt. of India, vide their letter, F. No.5/16/2006-E.III.A, dated 21st December, 2006, for formulation of proposal for Cadre Review of all groups of services (including organized Group 'A' Services), upgraded pay scales, restructuring of Departments/Organizations, etc.

As per above references, this proposal has been made afresh with proper justification considering all the future requirements.

2. Present condition of the IB(E)S officers: The employees including the IB(E)S cadre officers working in AIR/DD are Govt. servants/employees and they are on deemed deputation to Prasar Bharati. The promotions & career prospects of IB(E)S cadre officers are looked after by the Ministry of I&B, UPSC & DoPT as Ministry of I&B, Govt. of India is the cadre controlling authority for IB(E)S cadre officers in AIR and DD. There is a large scale of stagnation resulting in frustration and demoralization among all the group 'A' engineering officers of IB(E)S cadre. Due to poor promotional prospects, the IB(E)S, having its feeder cadre recruited through All India Engineering Services Examination conducted by UPSC, has become very an unattractive service.

It has been observed that during the last 12 years approx., only 177 direct recruits joined the department against the vacancies of about 300, in the JTS cadre. Out of these, 38 have left after serving 4-5 years in this department to join IRS/ITS, etc., due to poor

career/promotion prospects. If such disturbing trend is not contained by improving the promotional prospects in IB(E)S cadre, it will become practically impossible to sustain the technical quality and standards of broadcast services particularly at a time when the public broadcaster is facing stiff competition from other broadcasting organizations, nationally and globally.

3. Expansion and Growth of the Radio & Doordarshan network:

Over a period of time AIR and Doordarshan, have grown many folds. At the end of 6th Five year Plan there were only 97 AIR stations, however by the end of 10th Plan the figure has gone upto 225. Similarly in Doordarsan, there were only 17 Programme Production Centres, this figure has jumped to 64. The total nos. of TV transmitters were 173, the figure has jumped to 1399. The details of growth of the network is given below:

a. Growth of the All India Radio network:

Sl. No.	Major items/ functions of AIR network(FAG)	At the end of the 6 th Five Year Plan	At the end of the 7 th Five Year Plan	At the end of the 8 th Five Year Plan	At the end of the 9 th Five Year Plan	At the end of the 10 th Five Year Plan
1	Total No. of Broadcasting Centres/AIR Stations	97	126	187	208	225
2	Total No. of Transmitters	178	220	297	334	361
3	Total No. of FM Transmitters	5	37	98	130	161
4	Total No. of SW Transmitters	36	43	52	55	54
5	Total No. of MW Transmitters	137	140	147	149	146
6	Broadcast Coverage (population)	94.91	95.90	97.30	98.84	99.14 %
7	Broadcast Coverage (area)	83.71	85.40	90.00	89.66	91.78 %
8	Satellite Channels on DTH (Nos.)	NIL	NIL	NIL	NIL	20

9	Total No. of Captive Earth Stations (Up-Links)				24	28
10	Total No. of RN Terminals (Digital) (Down-Links)				52	207
11	Total No. of Zonal CE Offices	4	4	4	5	5
12	Total No. of RSTI(T)s	-	-	1	2	5
13	Group 'A' cadre staff (Total Nos. & % of the total engg. strength)		852	1,049	826 (13.40%)	825 (13.44 %)
14	Total Engg. staff in AIR	Not Available	7,113	8,904	6,163 (24.28%)	6,140 (23.19%)
15	Total staff strength of AIR in all the disciplines	Not Available	24,197	27,485	25,388	26,475

b. Growth of the Doordarshan network:

Sl. No.	Major items/functions of DD network (facts at glance)	At the end of the 6 th Five Year Plan	At the end of the 7 th Five Year Plan	At the end of the 8 th Five Year Plan	At the end of the 9 th Five Year Plan	At the end of the 10 th Five Year Plan
1	Total No. of the Programme Production Centres /DDK	17	19	43	58	64
2	Total No. of Terrestrial Transmitters	173	523	921	1308	1399
3	Total No. of Channels	1	1	17	22	30
4	Broadcast Coverage (population)	56%	76.3%	86.9%	89.6%	92 %
5	Broadcast Coverage (area)	36.5%	54.5%	71.6%	77.5%	80%
6	Total No. of the Satellite Channels on DTH	-	-	-	-	43

7	Total No. of DD Maintenance centres	22				126
8	Total No. of Satellite uplinks	1				36
9	Group 'A' cadre staff (Total Nos. & % of the total engg. strength)				653 (5.37%)	648 (5.27 %)
10	Total Engg. staff in DD	Not Available			12,162 (55.83 %)	12,292 (55.10 %)
11	Total staff strength in all the disciplines	Not Available			21,783	22,308

5. Growth of the total manpower of All India Radio & Doordarshan (combined):

It may be seen that though the network has grown manifold in the last 25 years, there has hardly been any increase in the manpower. There were 42,000 employees at the end of 6th Five Year Plan. Now the total number of sanctioned posts is 48,783 by the end of 10th Five Year Plan. As far as engineering personnel are concerned, there were about 14,000 employees at the end of 6th Five Year Plan. The figure is now about 18,000. The details of manpower of both the networks are given in the table below :

Sl. No.	Major items/functions of AIR network (facts at glance)	At the end of the 6 th Five Year Plan	At the end of the 7 th Five Year Plan	At the end of the 8 th Five Year Plan	At the end of the 9 th Five Year Plan	At the end of the 10 th Five Year Plan
1	Growth of all the disciplines- group-cadre (total) staff strength of AIR & DD *	42,000 approx.	45,000 approx.	46,000 approx.	47,079 (25,296+21,783)	48,783 (26,475+22,308)
2	Total No. & % of all the Engg. staff of AIR & DD to the total staff strength	14,000 approx. (33.33 %)	16,000 approx. (35.56 %)	16,400 approx. (35.65 %)	18,428 (39.14%)	18,432 (37.78%)

3	Total No. and, % of the Group 'A' cadre- Engg. staff of the total engg. staff strength of AIR & DD	1121 (8 %)	1509 (9.43 %)	1358 (8.28 %)	1,448 (8 %)	1,448 (8 %)
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PRESENT STRENGTH

c) Engineering Staff Strength in the IB(E)S –AIR & Doordarshan (As on 01.02.2009):

Cadre	AIR			DD			Total		
	Sanctioned Posts	Filled Posts	Vacant Posts	Sanctioned Posts	Filled Posts	Vacant Posts	Sanctioned Posts	Filled Posts	Vacant Posts & (% vacancy)
E-in-C	1	1	0	1	0	1	2	1	1 (50%) -
SAG	15	11	4	7	5	2	22	6	6 (27%)
JAG	94	79	15	49	44	5	143	123	20(14%)
STS	275	174	101	310	201	109	585	375	210 (35%)
JTS	440	192	248	281	229	152	721	321	400 (55%)
Total Strength	825	457	368	648	379	269	1473*	836	637(43%)

*Sanctioned Strength includes regular as well as installation posts as on 1.02.2009.

6. As one of the main objectives of a cadre review is to estimate future manpower requirements on a scientific basis for a period of 5 years. Hence it is necessary to examine the tasks to be taken up in the AIR & DD Networks in the next five years. First we shall deal with AIR.

At present AIR network comprises of 231 broadcasting centers transmitting through a network of 372 transmitters. The primary grade coverage is 91.78% (by area) and 99.14% (by population) and coverage by FM signal is about 35% by population and about 25% by

area. AIR runs a three tier service i.e., national, regional and local. It also runs external services through SW Transmitters .In addition, 21 AIR channels are available on Ku Band on DD DTH Direct plus platform, all over India except Andaman & Nicobar Islands where DD DTH footprint is not available. AIR fulfills its role of providing information, education and entertainment to its listeners. AIR broadcasts programmes in 22 languages and 146 dialects to almost the entire population of the country which has crossed 1 billion mark. It also runs external services in 10 Indian & 16 foreign languages.

GRAND PLAN FOR DIGITALIZATION OF ALL INDIA RADIO

Broadcasting organizations all over the world have been switching over to digital technology as it has an edge over the conventional analogue technology. Manufacturers are switching over to production of digital transmission equipments and in coming five to seven years the production of conventional analogue broadcast equipment may be totally stopped. As digitalization is a compulsion, India cannot afford to lag behind. Accordingly a sub-group of the Planning Commission on 'Going Digital' has been formed in a meeting presided by the Principal Secretary to the Prime Minister and the sub-group is headed by the Member Secretary, Planning Commission. The sub-group of Planning Commission on 'Going Digital' has charted out a road map for digitalization of broadcasting: " Commencement of digital terrestrial broadcast in selected cities by Prasar Bharati in four steps i.e. Step-1 in Delhi by 2010, Step-2 in all mega cities by 2011, Step-3 in all Tier II & Tier III cities by 2012 & Step-4 in all other areas by 2013. The nationwide switch off of analogue broadcast by 2015".

AIR's technical facilities broadly comprise of three set-ups: (a) studios (b) transmitters and (c) studio-transmitter links. Digitalization of AIR will essentially comprise of digitalization of these three set-ups. Accordingly, AIR has prepared a Grand Plan for complete digitalization of studios, transmissions and terrestrial and satellite links by the end of XII Plan (by the year 2017). Due to increase in GDP growth rate, the per capita income of Indian citizens is poised to grow, therefore, the aspirations of the people will also change. In order to meet the needs of the people, radio broadcasters may have to reformat their programmes for various socio-economic groups.

KEY BENEFITS OF DIGITALIZATION

There is immediate marked improvement in audio quality as a result of introduction of digital radio transmissions. The digital transmissions also facilitate multi channel transmissions as compared to a single channel operation with conventional analogue transmitters, thus

giving the listeners more choice of programmes. The digital transmissions also support insertion of texts, graphics, etc along with the radiated programme- thus adding new features and attractions for the listeners. The grand plan also provides for expansion of FM coverage from existing 35% to about 90% of the population, mostly in semi-urban and rural areas and extension and strengthening of coverage in the border areas. External Services will also be strengthened and All India Radio will commence the coverage of the American continent in satellite mode. Value added services will be added along with digital transmission.

AIR is one of the major radio broadcast networks in the world. It has a large pool of broadcast professionals with programming and technical expertise to discharge its obligation as a National Public Service Broadcaster. It has a vast broadcasting infrastructure in terms of studio set-ups, transmitting stations and networking system. AIR is an important stakeholder in the entire process of digitalization. Technical Setup in All India Radio : As already stated above, the present broadcasting set up of AIR comprises of (i) Transmitters (ii) Studios & (iii) Tele-communication links

Medium Wave Transmitters :- Medium wave band has the frequency range between 525 kHz to 1605 kHz and signals in this band propagate as ground waves. Coverage depends upon power of the transmitter, frequency of operation and conductivity of the ground .At present, AIR has 148 MW transmitters in its network.

Short Wave Transmitters : Short Wave has the frequency band from 3 MHz to 30 MHz. Signals in this band propagate as sky waves. Its coverage depends upon conditions in the ionosphere and hence its reception is affected by fading, interference and static noise ,etc. At present, AIR has 54 SW transmitters in its network.

FM transmitters : FM has the frequency band between 87 MHz to 108 MHz. FM transmission is a line of sight propagation. At present, 171 FM transmitters are operational in AIR Network.

Studios: Studios provide programme generation and production facilities, recording, editing facilities and playback facilities, news gathering & editing facilities, etc. AIR has different type of studio setup according to the production requirement of the station and

categorized as Type I, Type II, Type III and Type IV , Above Type IV . At Present 211 studios are in operation in the AIR Network.

Tele-communication links :

Satellite uplink /downlink– It is a setup that sends the signal of the produced programme to the satellite (called up-linking). Satellite sends it back to earth (called down linking) for relay by AIR stations.

Studio Transmitter Links : At many AIR stations, transmitter and studio are located at different locations. Studio is normally located in the heart of the town/city where as Medium Wave/ Short Wave Transmitter is normally located outside the town/city. In order to feed the programme from studio to Transmitters, Studio Transmitter Link is provided. The studio-transmitter linkage is provided by leased line/microwave link/ VHF link/satellite link.

Digitalization of AIR Network : From the above it is clear that all the three components of the broadcast chain viz; Studios, Transmitters & Studio-Transmitter link, have to be digitalized for attaining complete digitalization of AIR network as proposed below:

Digitalization of Transmitters

Digitalization of Medium Wave/Short Wave Transmitters: There is a global trend towards the adoption of digital technology in radio and communications, especially for distribution and transmission. Digitalisation offers many substantial advantages to national / international broadcasters and infocasters. All India Radio has adopted Digital Radio Mondiale (DRM) technology for digitalization of transmissions. DRM is the universal, openly standardised, digital radio system for short-wave, medium-wave and long-wave - digital radio for the radio frequencies below 30MHz. It has been endorsed by the ITU, and is standardised as ETSI ES 201 980.

DRM provides near-FM sound quality plus the ease-of-use that comes from digital transmissions. The improvement over AM is immediately noticeable. DRM can be used for a range of audio content, and has the capacity to integrate text and data. This additional

content can be displayed on DRM receivers to enhance the listening experience. The DRM consortium voted in March 2005 to begin the process of extending the system to the broadcasting bands up to 120 MHz. The design, development and testing phases are expected to be completed by 2007-2009. DRM+ is the extension to DRM and will be standardised under ITU and ETSI rules in 2009. It offers the certitude to regional and local broadcasters to take part in the digitalisation of radio also at higher frequencies.

AIR has adopted DRM technology for digital radio primarily because DRM is an open standard and comprises of non-proprietary technology. This DRM system makes use of the existing band of frequency allocated for MW and SW broadcast. Due to its long-range coverage in SW band, the broadcaster can beam their signals across the continents carrying digital programmes without any fading and interference. The technology is fully developed and more than 60 broadcasters are already having digital transmission all over the world. Receiver cost is expected to come down with mass production. Our neighboring countries like China have already started DRM system of transmission. AIR has launched regular DRM transmissions in Short Wave band w.e.f. 16th January 2009. The DRM signals are being beamed in to U.K. and West Europe on 9550 KHz. AIR has also started DRM transmission in NVIS mode for coverage around Delhi up to a radius of 800 kilometers in Short Wave Band on 6100 KHz w.e.f. 16th January 2009.

In the FM band this technology is called DRM+ and its trials have been successful and technical specifications are expected to be finalized in 2009. This technology aims to use same FM band and can be introduced in existing FM band for switching over to digital. DRM+ will offer CD quality surround sound. DRM operation will result in substantial savings in power consumption and also provide additional channels within the existing band width for earning revenue.

Digitalization of Transmitters

Medium Wave Transmitters

(A) Replacement/ up-gradation of existing Transmitters

At present 148 Medium Wave Transmitters are operational in the network. At three places i.e. Vijayawada, Kanpur and Varanasi, digitalization of MW Transmitters has not been

proposed as these transmitters have been replaced by FM transmitters. 145 Medium Wave Transmitters are proposed to be replaced by digital transmitters as below:

(a) Conversion of 39 DRM Compatible Medium Wave Transmitters to DRM Mode by 2010.

(b) Replacement of 39 outlived Medium Wave Transmitters by Medium Wave DRM Transmitters up to 2012 and replacement of another 59 Medium Wave Transmitters by MW DRM Transmitters upto 2017.

© Replacement of 7 Medium Wave Transmitters by FM DRM Plus Transmitters upto 2012 and another 9 Medium Wave Transmitters by FM DRM Plus upto 2017.

(d) Replacement of existing 6 Nos. of Mobile Medium Wave Transmitters by Medium Wave DRM Transmitters during XI Plan.

(B) New Schemes

Five number of high powered mobile MW DRM transmitters have been proposed (one for each zone) during the Grand Plan. Out of these, 1 No. is proposed to be procured during XI Plan period. These transmitters can be deployed as per the urgency including during natural calamities.

FM Transmitters

(A) Replacement/ up-gradation of existing Transmitters

In FM mode, DRM+ Technology is taking shape. It is expected that standard would be finalized by the end of year 2010. Therefore, FM Transmitters will be digitalized during the XI Plan period. It is proposed to replace 36 FM Transmitters (out of existing 171) which have outlived their life by FM DRM+ during the XI Plan period. Remaining transmitters will be replaced by the digital transmitters during XII Plan period.

(B) New Schemes

During the Grand Plan period, the FM coverage is proposed to be increased to about 90% of the population by setting up 780 new FM transmitters (including 600 Nos. low power FM Transmitters). Out of these, 144 new FM transmitters are planned to be set up during XI Plan period.

For maintaining the services during natural calamities and other eventualities 20 numbers of mobile FM transmitters have also been proposed during the XI Plan period.

Short Wave Transmitters

(A) Replacement/ up-gradation of existing Transmitters

At present, 54 SW Transmitters are operational in the network. Out of these, one 250 kW SW Transmitter at Khampur, Delhi has been upgraded to SW DRM Mode.

Following schemes have been proposed:

Conversion of 4 Numbers of compatible 250 kW SW Transmitters to DRM mode.

Replacement of 15 numbers of old SW Transmitters for External Services with SW DRM Transmitter by 2012. Remaining 34 SW Transmitters would be replaced by SW DRM Transmitter by 2017.

(B) New Schemes

10 new SW DRM Transmitters for Regional Service are proposed in state capitals where there is no SW transmitter is available at present. Of these, one SW transmitter is proposed at Almora during XI Plan.

Nation-wide SW Channels

In order to give listeners, choice of high quality programmes, 5 nation-wide SW DRM Channels are proposed to be introduced. For one channel, 3 numbers of 250 kW SW DRM Transmitters at three different locations with associated antennas would be needed.

Thus for 5 channels, 15 numbers of 250 kW SW transmitters will be needed. New studios facilities for these channels are also proposed at Delhi during XII Plan.

In the past there have been several occasions when AIR has played a very crucial role of a public broadcaster during emergencies like natural calamities, war, major accidents, terrorist activities, riots etc, by using its existing infrastructure for disseminating information to the affected people affected/likely to be affected by such catastrophes.

During an earthquake, flood or super-cyclone, AIR has performed its duty of disseminating the correct and timely information to the public. During occurrence of such disasters, the broadcasting services of AIR also are affected. Although all these above mentioned events are extremely unpredictable, AIR has always been to tide over the breakdown in its services due to these events in the shortest possible time. This could be possible because AIR has always kept itself in a state of preparedness to meet any man-made or natural calamity.

Mobile transmitters have played an important role in Disaster management. These are also deployed to maintain continuity of service while replacing old transmitters and also in the event of long breakdowns of a particular high power transmitter. AIR proposes the replacement of existing MW mobile transmitters (6 nos.)

Replacement of SW Transmitters by SW DRM Transmitters:

Analogue SW Transmitters have been used for linking the programme of capital stations of AIR to other stations in the state as well as providing the coverage in the uncovered areas. Now satellite uplinks & Satellite downlinks have been provided at the stations with quality of reception better than the linking of programme through SW transmitters. But to avail the capability of providing coverage to large and uncovered areas and better reception after digitalization of SW transmitter, AIR proposes replacement of 500 kW SW Transmitter at Bangalore which provides Vividh Bharati Programme to most parts of India.

External Services is one of the important services of AIR to keep the people of Indian origin and the world informed about the policies of Indian Government at the national and international level. The information is being provided through SW transmitters installed at Delhi ,Bangalore, Panaji, Aligarh, Mumbai, Chennai, Gorakhpur. Therefore, replacement of these transmitters are required. However, AIR proposes to replace 4 SW Transmitters only due to constraint of funds

FM expansion in Analogue mode

It is necessary due to most preferred mode of broadcasting. Its quality of broadcast is very good and receivers are very cheap. Now mobile phone manufactures are providing additional facility of FM reception in the mobile set, therefore FM mode has become extremely popular. There is a big demand for setting up FM transmitter from VIP/common people of rural and backward areas. In the XI plan. AIR proposes installation of FM transmitters at existing MW Centers/DD LPT where there is no AIR FM Coverage. Thus, AIR will be able to expand FM coverage by about 15% by population at the economical cost of Rs 75 Cr. No extra manpower would be required to operate these transmitters. It is to mention that these transmitters will have the capability to switchover to digital as and when DRM receiver will be available to masses economically. The priority of locations has been decided in the order matching with the priorities mentioned in the report of the Sub-Group on "Going Digital".

Value added Services

It is possible to transmit value added services along with digital transmissions, which may be helpful in revenue generation. A number of value added services can be introduced like interactive Text Transmission, Broadcast website, Multimedia Object Transfer (MOT), Slide show, Paging, Emergency warning, traffic and travel information using Transport Protocol Expert Group (TPEG) transmission, Differential Global Positioning System(DGPS) transmission, etc. All India Radio can avail the benefits of these value added services, which will not only cater to the needs of various sections of listeners but also provide scope to enhance revenue earnings through private investments.

Digitalization of Studios

There are 211 studio set-ups in the AIR network and 40 new studios are under implementation as part of spill-over scheme of X Plan. The studios of AIR have been categorized according to the facilities are provided at the centers. i.e Type -I, Type-II, Type - III, Type- IV, Above Type IV, MP(Multipurpose) and VOR(Voice Over Relay). The digitalization of studio centers of AIR was the mandate of the Government in the 10th Plan itself. It was decided to digitalize all the studios across the country in a phased manner. As a

result, one fully digital Studio at Delhi (New broadcasting House) was set up and 137 existing smaller Kendras were partially digitalized in the 10th plan by installing hard disc based computerized studio automation systems. Another 48 studio centers are being partially digitalized by providing them with hard disc based studio automation system.

The full digitalization of 210 studios is proposed to be carried out as below:

It is proposed to digitalize 140 studios by 2012 and all studios by 2017. Studios at Delhi (BH), Mumbai, Chennai and Kolkata and 35 other places going to have DRM compatible Medium Wave Transmitters will be fully digitalized by 2010. Studios for 5 Nation Wide SW DRM channels are proposed to be set up by 2017. 30 archive centres at important centres have been proposed in the Grand Plan. Of these, five archive centres are proposed by the end of 2010 and remaining are proposed to be set up by the end of XI Plan. It is proposed to digitalize 98 studios in this plan. Studios at Delhi (BH), Mumbai, Chennai and Kolkata and studios at 35 other places going to have DRM compatible Medium Wave Transmitters by 2010. Digitalization of the Archiving facilities are essential for preservation of the rare, old and precious program content available exclusively with AIR and also automation of News production & Transmission related facilities will ensure smooth, flawless production & transmission of news & current Affairs. The archiving facilities envisaged will be for strengthening the central archives at Delhi and setting up of new regional archives at Delhi, Kolkata, Mumbai, Chennai & Hyderabad during the XI plan. Transmission schedule, transmission Log Book, Royalty Payments and Billing of commercials etc. shall be fully automated at all centres. Dissemination of information at anywhere/anytime has become need of the hour. So information as well as programmes produced in any part of the country should be available to listener in real time. For that, all the Akashvani Kendras & News Service Division are proposed to be connected through VPN network.

Digitalization of studios will have to continue to ensure better quality of program production thereby ensuring a better quality of service to the listeners. This will also enable AIR as a Public Broadcaster to compete technologically & commercially with various broadcasters who are operating nationally as well as internationally. Secondly, it is also a technological compulsion now to switch over to digital since the manufacturers globally have started abandoning the production of analogue equipments and its spares thereby creating scarcity of analogue equipments, spares and services. Economically it will also prove to be expensive to continue using analogue equipments. Further the exchange of programmes among various AIR Kendras and for international events, conversion of all analogue studio equipment to digital is an essential requirement.

Automation of News Services

At present, 44 RNUs(Regional News Units) are functioning. Seven new RNUs are proposed to be set up during the XI Plan. All the 51 RNUs are proposed to be fully automated and fully modernized. At present, News-on-Phone service is available in 14 RNUs. During XI Plan, News-on-Phone service shall be started from all the RNUs. At the end of Grand Plan, there will be a total of 64 RNUs in the network. NSD Headquarters will also have its own Data Centre and would be accessible to all the RNUs. Exclusive networking of NSD Headquarters with all the RNUs is proposed during the XI Plan for exchange of data/ news for seamless operation. Networking of NSD Headquarters with all the RNUs is proposed during the XI Plan for exchange of data/ news for seamless operation.

Digitalization of Tele-Communication Links:

(A) Replacement/ up-gradation of existing Tele-Com Links

All tele-com links between studio & transmitter, inter-station, RN Networking , DTH channel will be digitalized by the end of XI Plan. This will comprise of 115 Nos. of existing analogue STLs and 44 Nos. of C Band analogue downlinks. However, it is also proposed to replace the existing digital 113 down links, 25 uplinks and encoders for DTH channels which will become due for replacement in XII Plan.

(B) New Schemes

Under the new schemes related to connectivity, new satellite uplink facility at 8 places, provision of 30 additional DTH(Direct to Home) Radio channels and 25 DSNG(Digital Satellite News Gathering) terminals are proposed. The DSNG terminals will play an important role in the live coverage of field events in the case of natural disasters, sports and other important activities as per the needs of Programme and News Wings.

Important programmes of each station shall be digitalized and stored in a central server with Disaster Recovery System (at a different location) so that any station can have access to

any programme at any time. This will avoid multiplicity of storing same programmes and result in overall savings.

Acoustic treatment of existing studios will have to be modified particularly in respect of Noise Figure levels so as to meet international standards for Digital Recordings. Many existing studios would also require refurbishing as these are quite old and their performance have deteriorated.

E-Governance and up-gradation of IT facilities in All India Radio

As per the PMO's directions, all office management and project management activities should be computerized. All India Radio has already made a beginning by providing computers at all the centers. However, as the technology is changing very fast, up-gradation of the IT facilities is necessary. Following schemes are proposed in this regard –

Customized ERP (Enterprise Resource Planning) Solution
Strengthening of IT network.

Augmentation of Training facilities

In order to meet challenges in Programme Production, New Technology and Management Skills, the staff would need training. It is proposed to augment facilities in existing Training Institutes and start new Training Centers. In addition to in-house training, it is recommended to have a MOU with one or two premier engineering colleges(e.g, IIT s or IISC) so that at least 10 meritorious officers from the grade of ADE/DDE(2 from each of the five Zones) are sponsored for undertaking M. Tech programmes every year.

Science & Technology (R&D)

In present scenario technological developments are taking place very fast, therefore the role of R&D has become crucial. Besides technology trend forecasts, R&D will provide necessary technical support to the network. The following schemes for Research Department have been proposed during XI Plan:

- (a) Development of Propagation Measurements & reception Survey System for Digital Radio Transmission.
- (b) Development of High Power FM Transmitting Antenna.
- © Development of Advanced Monitoring and Control (Telemetry) System for Broadcast Transmitters.
- (d) Pilot project for setting up of a Low Power DRM Transmitter in Metros/Zonal Headquarters in 26 MHz SW Band.
- (e) Modernization of Acoustic Laboratory.
- (f) Up-gradation of Technical Monitoring Facilities at Monitoring Station, Todapur, New Delhi.
- (g) Up-gradation of R&D Support Facilities
- (h) Strengthening of Prototype and Production Centre in Research Department.

Webcasting & Podcasting

There is a growing trend of operating internet radio channels by broadcasters all over the world. With the expansion of internet services in India, there is a tremendous opportunity to provide internet streaming of programmes. All India Radio has got a rich depository of music and other items. All India Radio will be streaming 20 channels on internet by the end of 2009. During XII Plan, it is proposed to put all AIR channels on internet.

Revenue Generation

In addition to normal sources of revenue generation through advertising, AIR could possibly earn revenue by launching multi-media service with multiple channels of programmes (sound, data and video) in satellite mode duly supported by terrestrial mode in metropolitan cities. With digital transmission, it is possible to transmit value added services also which are helpful in revenue generation. A number of value added services like dynamic label, Interactive Text Transmission, Broadcast website, Multimedia Object Transfer (MOT), Slide show, Paging, Emergency warning, traffic and travel information using Transport Protocol Expert Group (TPEG) transmission, Differential Global Positioning System (DGPS) transmission, etc. are possible using digital broadcasting systems. All India Radio can start these value added services, which will not only cater to the needs of various sections of listeners but also provide scope to enhance revenue earnings through private investments

Additional channels will be available on a single carrier of DRM and DRM+ transmitters within the same bandwidth. AIR has proposed in DRM+ mode a number of new FM transmitters most of them in semi-urban/ rural areas where private broadcasters may hesitate to invest. Thus AIR can lease out some of these channels at these places to private operators on rental basis. This will lead to substantial revenue generation and pave way for Public Private Participation. With the help of these high quality multi channel broadcasts, AIR will be able to attract advertisers in a big way and its earnings will increase.

Interactive Radio

Interactive radio service or visual radio is offered by some broadcasters in collaboration with mobile phone service providers. Through visual mobile radio, subscribers can, apart from audio, also get visuals, information and other details about the singer and the song being played. Apart from all these services, visual radio offers listeners a chance to participate in opinion polls, quizzes, and even the facility to download ring tones and wallpaper related to a particular song. Depending on the additional services provided by the service provider, visual mobile radio users can also buy tickets for movies from which the song is being played.

Common Transmission Infrastructure with Private Broadcasters

In the course of private FM expansion, the infrastructure facilities available with Prasar Bharati, have been leased out to private operators in a number of cases. The same practice can be continued after digitalization to earn revenue.

Going by the size and complexity of the grand plan for digitalization of All India Radio, it can be implemented successfully only if Indian Broadcast Engineers Service is re-vamped and re-structured so that it is fully prepared to take up the challenging tasks of digitalization and accomplish this huge task successfully.

GRAND PLAN FOR DIGITALIZATION OF DOORDARSHAN

There is a global trend for digitalization of broadcasting and there is no escape from switching over from analog to digital. As already stated in the Report, a sub-group of the

Planning Commission on 'Going Digital' has been formed in a meeting presided by the Principal Secretary to the Prime Minister and the sub-group is headed by the Member Secretary, Planning Commission. The sub-group of Planning Commission on 'Going Digital' has charted out a road map for digitalization of broadcasting. Like All India Radio, Doordarshan is a major player & an equally important stakeholder in the entire process of digitalization and there is a grand plan for digitalization of Doordarshan.

Broad concept of Doordarshan's technical working

Doordarshan is basically divided into three broad technical setups. They are (i) Studios (ii) Transmitters & (iii) Satellite uplinks. A Studio setup, commonly known as a Kendra, is a setup/establishment comprising of TV production facilities, post production facilities, News gathering & editing facilities, News/programme telecasting facilities and staff support facilities such as administration, accounts etc. A Transmitter setup consist of one or more transmitters which receives the signal of the programme to be telecast from the Satellite using a PDA [Parabolic Dish Antenna] system and sends the signal so received to its antenna system mounted on a tower commonly called a Mast for radiating terrestrially. A Satellite uplink is a setup that takes the signal of the produced programme and sends it to the desired satellite [called uplinking] , from where it can be down linked for viewing either as DTH [Direct to Home] or through Cable connection from cable operator to home or terrestrially through a transmitter. Once a programme is produced and ready to be taken to its viewers, there are two modes of transportation for the programme in DD, i.e. through a satellite or through a terrestrial transmitter. All the three technical areas/setups viz; Studios, Transmitters & Satellite uplinks have to be digitalized for attaining a complete digitalization of Doordarshan.

In the 10th Plan period a few studio setups and satellite uplink setups were digitalized in a fragmented manner. In the grand digitalization plan all the remaining areas/setups are proposed to be converted into a digital mode thereby targeting complete digitalization of Doordarshan. The projects enumerated below are proposed to be taken up to achieve complete digitalization of Doordarshan:

1. Digitalization of Transmitters
2. Digitalization of Studios
3. Modernization, Augmentation & Replacement of Satellite uplinks

Digitalization of Transmitters

These are the ten components under this project which needs to undertaken for complete digitalization of the terrestrial transmitter network of DD:

1. Setting up of DTTs [Digital Terrestrial Transmitters]
2. Providing Digital measuring equipments at 5 zonal offices
3. Remote monitoring/switching of VLPTs [Very Low Power Transmitters]
4. Conversion of analog HPTs to digital HPTs [High Power Transmitters]
5. Conversion of analog LPTs to digital LPTs [Low Power Transmitters]
6. Modernization of measuring & maintenance & testing facility for digital network
7. Frequency conversion of existing analog HPTs & LPTs to avoid interference
8. DTH sets in places of VLPTs closed down [200 Nos. per VLPT at 375 VLPTs]
9. Value added service over DTT
10. Disaster management/emergency requirements

The details of each of the above ten components shall be explained in the succeeding paragraphs :

1. Digitalization of Transmitters

Doordarshan at present is having analog TV transmitters installed throughout the country. A TV Transmitter set-up is not always accompanied with a TV studio set-up. There are many TV Transmitter Relay Centers where no TV Studio Centre is available. However all TV Studio Centres are having a TV Transmitter, except for a few. At present DD has approximately 1400 TV transmitters in the country. Under digitalization all the existing analog TV transmitters are required to be replaced by Digital Television Transmitters (D.T.T). The DTTs shall be installed at those locations where at present analog terrestrial transmitters are functioning and there are some new locations also proposed for DTT High Power Transmitters(HPT). The analog transmitters cannot be switched off suddenly after the installation of DTTs since the viewers have to buy a STB (Set Top Box) to view a programme transmitted from a DTT. Therefore, some reasonable time is required to be provided to the viewers to buy STBs so that they are able to view DTT transmission. At present a STB is costing Rs.3000 to 4000. Therefore the analog transmitters as well as DTTs are to be continued simultaneously for some time. This will facilitate smooth transition

from analog to digital in a developing country like India. The present status of analog TV transmitters & digital transmitters required are provided below:

Type of Transmitters.	Present Analog Transmitters	Required digital Transmitters (DTT)	Remarks
High Power Transmitter (HPT)	199	230	* All VLPTs will be closed down after completing useful life and will not be replaced
Low Power Transmitter (LPT)	830	400	
Very Low Power Transmitter(VLPT)	372	Nil *	
Total	1401	630	

High Power Transmitter(HPT) -It means a Transmitter Power of 10 KW and above

Low Power Transmitter(LPT) -It means a Transmitter Power of less than 1Kilowatt

Very Low Power Transmitter(VLPT) -It means Transmitter Power of less than 100 watt

It is evident from the above table that 230 DTT HPTs shall be required in place of 199 analogue HPTs, however the number of LPTs will come down from 830 to 400. It may be further mentioned that there are 130 existing locations of Analog HPTs where DTT HPTs shall be installed while there will be 100 additional locations where DTT HPTs shall be installed by upgrading the existing analog LPTs to provide the same coverage which is being provided by existing analog HPTs including that being covered by some of the existing analog LPTs. The existing 199 analog HPTs include the independent HPTs transmitting National service, DD News service and Regional service. In case of DTT HPTs a single HPT will be able to radiate 6 to 8 programme channels. It means the separate analog HPTs required for DD National and DD News and Regional service, now in case of DTT, will not be required and only one DTT HPT will suffice for all the three services. The same is also applicable for analog to digital LPTs. Digitalization plan has been made with the aim to provide current level of population coverage (about 91%) with minimum number of transmitters. Presently the total numbers of transmitters are 1400 whereas after complete digitalization the number of DTTs will only be 630 which will substantially save the spectrum resource, power supply consumption, space, manpower requirement etc.

The phasing out of analog transmitters by installing DTTs is also a technological compulsion since the manufacturing of analog transmitters and their spares, will be stopped in near future by the OEMs (Original Equipment Manufacturers) of these transmitters. The DTTs will be networked, using the satellite up-linking by providing one earth station for combining all the 8 TV channels in one bouquet to be down-linked and relayed by each of the DTTs. It is proposed that the 5KW DTT [Digital Terrestrial Transmitters] will be installed at the existing analog HPT sites by utilizing the present infrastructure like building and tower and also at new sites by acquiring of lands, construction of the transmitter buildings, towers etc. It is expected that the digital transmitters would provide TV coverage up to the area presently being covered by the existing analog transmitter. The TV signal transmitted from either an analog or a digital terrestrial transmitter can be received using a rooftop-receiving antenna commonly called a Yagi antenna. The digital terrestrial transmitter is proposed to be operated on UHF Channel in Band IV and will relay a bouquet of about 6 to 8 TV programme channels having an appropriate mix of national, regional and local programming.

DTT implementation will have the following advantages:

- (i) Digital Terrestrial Transmitters will be provided at locations where already analogue transmitters are operational as well as at new locations too. Once the DTT is installed and commissioned successfully, the analogue transmission shall be closed in the analog switch-off year.
- (ii) Digital Terrestrial Transmitters will be able to relay six to eight channels of TV programme simultaneously instead of the only one channel of programme being relayed by an analogue transmitter. This will save substantial amount of power consumption in a transmitting station & frequency resource.
- (iii) The Digital Terrestrial Transmitters shall also save scarce resources of spectrum since one UHF TV channel shall be used for transmitting 6 to 8 channels of programme by single D.T.T multiplex whereas six to eight transmitters are required in analog mode.
- (iv) With a Digital Terrestrial Transmitters 6 to 8 programme channels can be transmitted over one transmitter multiplex at the slightly high cost of 1.3 as compared to analogue transmitter cost thus attaining a substantial saving in capital cost/programme or transmitter hardware.

- (v) The Digital Terrestrial Transmitters are already being installed in most of the developed countries like USA, UK, France, Japan and Australia etc. all around the world. The most of the developed countries have planned to switch off analogue transmission by 2012 to 2014.
 - (vi) The equipment, spares of analogue transmitters are being phased out and they may not be available in world market in future. Therefore, it is the technological compulsion to switch over from analogue to digital transmission.
 - (vii) Quality of the reception will be undoubtedly better than that of the analogue signal thereby increasing viewer's satisfaction level.
 - (viii) The coverage area of the DTT is expected to be the same as that of the analogue transmitter.
 - (ix) 3 Nos. of staff per DTT HPT at those locations where analog HPT is existing and additional staff per DTT HPT at new locations where analog LPTs are existing shall be worked out in due course for operation & maintenance because the analogue services will also continue in addition to DTT at all the existing locations till analog switch-off since viewers has to buy a S. T. B. [Set Top Box] for viewing DTT service.
 - (x) The reduction of total number of transmitters from 1400 to 630 after complete digitalization of terrestrial transmitter and closing down of 361 VLPTs, the requirement of maintenance Centers shall reduce from existing 126 Nos. to 50, bringing down the requirement of manpower for operation & maintenance.
- (XI) The present analog transmitters operational in DD network [except a few analog HPTs purchased in the last three to four years] cannot be converted into digital transmitters. However at present the analog transmitters available in the market can be easily converted in to a digital transmitter by incorporating some modifications which is quite economical compared to a new DTT.
- (XII) It is also not possible to transmit both analog & digital signal simultaneously from the same transmitter. Two separate transmitters are required to transmit analog and digital signals at the same time, in order to ensure a smooth transition from analogue to digital.
- (XIII) DVB-H: (Digital Video Broadcast to handheld) --- DTT is also being used for telecasting the TV signal to mobile handsets which is called DVB-H service. Doordarshan has commissioned its pilot project on DVB-H in Delhi in May 2007 with a coverage range of approximately 10 Kms radius. A consultant is being

engaged for developing a suitable PPP model for expansion of this service in other parts of the country. Therefore the requirements of funds for DVB-H are not being proposed at this stage.

Remote monitoring/switching of VLPTs [Very Low Power Transmitters]

In the previous plan, projects have been framed and executed for monitoring the VLPTs from remote location. The remote location is none other than the Doordarshan Maintenance Centre, the controlling authority of the VLPT. Since these VLPTs are in general unmanned, hence switching and monitoring these transmitters is essential from a remote location to ensure its healthiness. This proposal will enable to continue providing this facility at locations where remote monitoring & switching is not yet made available.

Conversion of analog HPTs to digital HPTs [High Power Transmitters]

In this project it is proposed to convert 10 Nos. of analog HPTs to digital HPTs. These analog HPTs can be converted to a digital HPT after some minor changes in its baseband equipments etc, which will cost less than a new digital transmitter.

Conversion of analog HPTs to digital LPTs [Low Power Transmitters]

In this project it is proposed to convert 60 Nos. of analog LPTs to digital LPTs. These analog LPTs can be converted to a digital LPT after some minor changes in its baseband equipments etc, which will cost less than a new digital transmitter.

Modernization of measuring, maintenance & testing facility for digital network

With the digitalization of the existing terrestrial transmitters there will be a need to have the measuring and testing facilities also. Hence there will be a requirement for measuring and test equipments to measure and ensure the quality of output signals. These equipments shall be provided at all the DTTs & DMCs.

Frequency conversion of existing analog HPTs & LPTs to avoid interference

Each terrestrial transmitter, whether a HPT or a LPT, uses only one frequency for transmitting its signal. This frequency is allocated after obtaining the clearance from the WPC [Wireless Planning Commission], for which a payment is required to be paid to the WPC. Each transmitter is frequency dependent and whenever another transmitter is installed and operated having the same frequency, interference will occur between the signals transmitted from these two separate transmitters. In order to avoid this interference separate frequency has to be got approved from the WPC for that location.

DTH sets in places of VLPTs closed down [200 Nos./VLPTs at 375 VLPTs]

With the digitalization of the terrestrial transmitters there will be a reduction in the numbers of the transmitter and some VLPTs [Very Low Power Transmitter] will be closed down. These VLPTs will be closed down because the cost of a digital VLPT will prove to be expensive vis-à-vis the DTH service which is already available in these areas. Once these VLPTs are wound up, their coverage areas will be provided with DTH systems for viewing the DD programmes. It is estimated that 200 Nos. of DTH systems shall be supplied per VLPT being closed and there will be 375 Nos. of VLPTs which shall be closed.

Value added service over Digital Terrestrial Transmitters

The digital transmitters can also be used for providing value added services to the viewers. These value added services will come in demand after the DTTs become operational. These value added services will be like data broadcasting, T-commerce, encryption system, SMS over DTT etc.

Disaster management/emergency requirements

In the past there have been several occasions when Doordarshan has played a very crucial role as a public broadcaster during emergencies like natural calamities, war, major accidents, terrorist activities, riots etc. by using its existing infrastructure for communicating the information relevant to the catastrophe. Whether it is an earthquake, flood or super-cyclone, Doordarshan, as a public broadcaster, performed its duty of disseminating the correct information to the viewers inside the country & abroad. During occurrence of such disaster, the broadcasting services of Doordarshan also are affected. Although all these above mentioned events are extremely unpredictable, DD has been able to tide over the breakdown in its services due to these events in the shortest possible time. This could be possible because Doordarshan has been in a state of preparedness which is solely based on the foresightedness of the organization.

After taking a stock of its past experiences, Doordarshan proposes in the 11th Plan, a disaster management/emergency requirement scheme. This kind of planning is not only desirable after taking cue from the guidelines issued from time to time by the Government of India but essential too in the larger interest of the viewers of the country. The proposal has been framed to prepare DD to meet the emergency requirements arising during the occurrence of any disasters including those perpetrated by mankind. The following items have been decided to be taken up in the 11th Plan period:

- 1) Procurement of Transmitters, broadcasting antennas, RF feeder cables & all the essential accessories.
- 2) Repair/replacement of guyed mast or self supporting towers.
- 3) Procurement of diesel generators, UPS & Batteries etc.
- 4) SPV [Solar Photo Voltaic] panels to be used at transmitters.
- 5) Supply & Installation of Porta-cabins for housing transmitters.
- 6) Shifting of existing transmitters.

The above mentioned 6 items are explained below one by one.

1) Procurement of Transmitters, broadcasting antennas, RF feeder cables & all the essential accessories:-

During any emergency arising out of a natural disaster such as flood, earthquake or cyclone, the DD is always at its terrestrial transmitting end, thus paralyzing its services. Normalizing the services therefore means reviving the transmitter in the quickest possible time. This can be achieved promptly if and only if the hardware requirements can be made available at the site of disaster. It may not be out of context to mention here that the broadcasting equipments are not readily available off-the-shelf and there is a considerable lead time involved in the supply chain and successful installation/commissioning of these equipments. Keeping in view this limitation, the first and foremost need is to have a near ready state of purchase process for such hardwares in Doordarshan. Though the disaster is unpredictable, the hardware required to manage it is known. Therefore the following items are proposed to be procured through this project:

- (i) VHF & UHF transmitters [2x50 Watt] one for each zone i.e. North, South, East/North-East and West.
- (ii) 1 KW UHF/VHF broadcasting antenna for each channel being used in the DD network.
- (iii) UHF/VHF antennas for the HPTs [High Power TV Transmitters].
- (iv) RF feeder cables for transmitters [HPT, LPT & VLPT].

2) Repair/replacement of guyed & self supporting mast:-

One of the most vulnerable items to be affected by natural disaster is the transmitting antenna mast. Major tremors like those which occurred in Latur & Bhuj are capable enough to bring the self supporting as well as guyed mast to the ground. Masts have also crumbled during the super cyclone in Orissa and Tsunami in Port Blair. Therefore it is proposed through this project to provide for the repair and replacement of all such masts which have been affected and destroyed during the occurrence of natural disaster described above.

3) Procurement of Diesel Generators, UPS & Batteries etc.:-

During the occurrence of natural disaster some ancillary items such as diesel generators, UPS & batteries, air-conditioners, etc. are required to be provided at the transmitter to ensure uninterrupted operation of transmitters.

4) Procurement of SPVs for the transmitters:-

SPVs are the solar panels used at the VLPTs [Very Low Power Transmitters] only. These SPVs use the sun for charging the photovoltaic cells and converting into electrical charges through the electronics provided therein, thereby generating power to operate the transmitter. These solar panels are extremely prone to damages by flood water, high velocity wind and can be up-rooted by earthquakes. There is a need to have sufficient stock in hand to replenish during emergencies.

5) Supply & Installation of Porta cabins:-

During the occurrence of natural disaster there is an urgency to revive the affected services at the quickest possible time. Even though the hardware is available, yet delays are unavoidable if re-construction of an appropriate building is involved. Porta cabins, to an extent, have reduced the time required for the construction of a building. Through this project it is proposed to supply and install Porta cabins wherever situations desire so during the call of an emergency arising from any disaster.

6) Shifting of transmitters:-

It has been learnt from the past experiences that although all the required hardwares may be made available to resume the services after a disaster, the bottleneck has been the location itself from where the transmitter has to be made operational after the event. Under such adverse circumstances there is no option but to shift to a new location. This requires shifting all the existing equipments [installed or uninstalled] to the new location. Through this project DD proposes to provide for the shifting warranted during an emergency.

Digitalization of Studios

1. Full digitalization of the existing partially digitalized studios at 31 locations in Doordarshan network in India
2. Full digitalization of the existing analogue studios at 12 locations in Doordarshan network in India
3. Digitalization of Archiving facilities in Doordarshan network
4. Digitalization of Automation of News Production & Transmission related facilities in Doordarshan network
5. Modernization & Augmentation of studios by providing digital cameras, digital production switchers, character generators, frame synchronizers, video servers, logo generators, robotic camera setup etc. at existing 66 locations
6. Augmentation of recording and post production facilities by providing digital VCRs, Edit suites etc. at existing 66 locations
7. Augmentation of field production facilities in the existing OB/EFP/ENG vans at 25 locations out of the existing 66 studio center locations by providing digital camcorders etc.
8. Strengthening of audio facilities, monitoring & measuring facilities, studio & ENG lighting facilities etc. at existing 66 locations
9. Augmentation of power supply system equipment etc. at existing 25 locations
10. Replacement of essential services equipment including air-conditioning plant, lighting system, diesel generators, power supply equipments, acoustic treatments, technical furniture etc. existing 66 locations
11. Providing latest state of the art equipments at the studio centers for modernizing the already existing production and post production facilities at existing 66 locations
12. e-Governance, IT related schemes:
13. R&D and training
14. Induction of new technologies in the Network
15. Introduction of High Definition Television(HDTV)
16. Expansion of DD services by setting up of 5 new digital studio setups

The above mentioned 16 projects are explained below for describing their need & justification of the same:

There are 66 studio locations in the Doordarshan network. Each location is commonly called a Doordarshan Kendra [DDK]. In each Doordarshan Kendra there is either one or multiple studios. All these 66 locations/Kendras are classified into two broad categories (i) Major Kendra & (ii) Other Kendra. There are 17 major Kendras having multiple studios and remaining 49 are Other Kendras. The digitalization of studio centers (Kendra) of Doordarshan was the mandate of the Government in the 10th Plan itself. It was decided to digitalize all the studios across the country in a phased-wise manner. As a result, all the 17 numbers of the existing major Kendras were fully digitalized and 31 existing smaller Kendras were partially digitalized in the 10th plan. Now the status of the 66 Kendras is as follows:

Fully digitalized major Kendras : 17 Nos.

Smaller Kendra installed fully digital : 03 Nos.

Digital Kendras under implementation in fully digital set-up : 03 Nos.

Partially digitalized Kendras : 31 Nos.

Analogue Kendras due for digitalization : 12 Nos.

Total 66 nos

The digitalization of the studios will have to continue to achieve a total digitalization of all the studios in the network. This is necessary in order to ensure better quality of program production thereby ensuring a better quality of service to the viewers. This will also enable Doordarshan as a Public Broadcaster to compete technologically & commercially with various private broadcasters who are operating nationally as well as internationally. Secondly, it is also a technological compulsion now to switch over to digital since the manufacturers globally have started abandoning the production of analogue equipments and its spares thereby creating scarcity of analogue equipments, spares and services. Economically it will also prove to be expensive to continue using analogue equipments. Further to facilitate the exchange of programmes among various DD Kendras and for international events, conversion of all analog studio equipment to digital is an essential requirement.

In view of above, full digitalization of existing partially digitalized studio centers at 31 locations will be undertaken by providing digital production facilities, digital field production facilities, digital preview and post-production facilities. Full digitalization of

the existing analogue studios centers at 12 locations will also be undertaken. The digitalization project will focus on the digitalization of the archiving facilities, which is need of the time, for preservation and re-purposing of the rare, old and precious program contents available exclusive with Doordarshan and also Automation of News production & Transmission related facilities which will ensure smooth flawless production & transmission of News & Current Affairs. The archiving facilities envisaged will be for strengthening the central archive at Delhi, setting up new regional archives [Delhi, Kolkata, Hyderabad, Jalandhar, Ahmedabad & Guwahati], dedicated archive for SAARC countries.

The Central archive at Delhi will be strengthened by providing full resolution MAM system with sufficient online & near line storage, independent website for archive, provision of servers, digital VCRs, NLEs, Noise reducers etc. New regional archives will be set-up by providing high quality real time digital restoration system, advance noise reduction system, software based restoration system with NLE, Digital VCRs, standard noise reducers, video tape cleaners, DVD players/recorders, low resolution Media asset management system with limited storage. Similarly a dedicated archive for SAARC countries is also proposed to be set-up to share multicultural, historical heritage, economical, ecological and developmental contents.

In the above projects the activities mainly focuses on the modernization of the existing studio facilities through augmentation & replacement methods and each of the activities have been grouped together on the basis of functionality to the area of operation specific. The existing digital studio equipments which have become obsolete after useful life period shall be replaced with the latest state of the art digital technology.

In the recent past, the broadcasting technology has changed drastically and old technology/equipment is getting obsolete frequently. Modernization and augmentation of existing digital studio production facilities is a necessity in order to keep pace with the fast changing digital technology and to ensure better quality of program production and equally good quality of reception by the viewers. This will ensure that Doordarshan maintains its standard and consumer/viewer base in the present age of competitiveness does not deplete. This is essential since there is stiff competition from the private broadcasters who leave no stone unturned to woo away

the viewers. In addition the programme/context exchange between DD Kendra and among various broadcasters for international events clips etc. is also easier using the latest digital equipments because of compatibility.

One more advantage of replacement will come in the nature of manpower saving because with the latest state of the art technology robotic controlled units prove highly reliable, accurate & multi-taskable.

These projects are only for modernization of the existing studio equipments by providing the latest state art of the equipments at the selected studio locations.

IT (Information Technology)

IT is the buzz word of the 21st century. The developments in the field of computation have metamorphosed into a composite engine and invaded the world as IT. Information technology is the latest state of the art for operating any activity be it production, planning, supply chain management, infotainment or broadcasting to optimize its resources for deriving maximum benefits. Doordarshan is no exception.

Since the last couple of years, Ministry has also been insisting DD to spend 3% to 5% of the sanctioned budget grant towards IT and related activities. Although the TV programme production nowadays are completely dependent on IT based studio equipments, yet gray areas in the organizational architecture still persist, which need to be addressed for attaining a satisfactory level of IT proliferation. Therefore in the 11th Plan, Doordarshan proposes to adopt a few IT tools for improving its operational efficiency. These are summarized below:

- a) Modernization of Project Monitoring system by Implementing ERP [Enterprise Resource Planning].
- b) Augmentation of the existing computational infrastructure at the DD Centers by providing the latest IT logistics viz; computers and peripherals
- c) Augmentation of the existing IT logistics at DG: Doordarshan

The scope and facilities proposed to be provided under the items mentioned above are further elaborated in the succeeding paragraphs one by one:

i) Modernization of Project monitoring system by Implementing ERP [Enterprise Resource Planning]:-

Doordarshan uses the Plan allocation to frame various schemes that are being implemented simultaneously in a plan period of five years & sometimes beyond. Although the broad objective of incurring such expenditure is to improve the technical infrastructure in the network for the benefit of programmers to generate quality TV contents for the viewers, most of these schemes with its implicit projects are not dependent on each other and needs to be monitored exclusively. Monitoring, scheduling & rescheduling of these projects realize a substantial amount of effort, time & energy in absolute terms due to the complexities involved at every step of implementation right from its inception.

Modernization of project management is among the top priority area for IT implementation in any organization. Doordarshan is yet to adopt an IT based project monitoring system. Hence it is proposed to modernize DD's project monitoring system for ensuring timely completion and optimum utilization of resources by implementation the 'Enterprise Resource Planning' popularly known as ERP among Information Technologists.

The government of India has persuaded all its Ministries & departments to launch e-governance in its system for transparency & faster delivery of information to the citizens of this country. ERP is a tool that precedes mechanism for e-governance.

ii) Augmentation of the existing computational infrastructure at the DD Centers by providing the latest IT logistics viz; computers and peripherals:-

Under this scheme there is a focus for objectively infusing the use of IT in Doordarshan for its day-to-day activities. Though, in the previous years, there have been umpteen attempts to dedicate a humble percentage of the available funds towards this novel target, yet a level of complete or near complete achievement is yet to be realized. A major reason is the scarcity of funds in the department under Revenue Non-Plan which can ill afford the hardwares and softwares meant for a complete IT based working because of their prices. Therefore it is proposed through

this scheme to provide computers and other logistics to all the HPTs [High Power Transmitter] & DMCs [Doordarshan Maintenance Center]. This will also ensure the availability of a uniform IT logistics at all these centers.

iii) Augmentation of the existing IT logistics at DG: Doordarshan:-

The scheme also proposes augmenting the existing IT logistics at DG: Doordarshan. The use of computers and other peripherals have increased many fold in the Doordarshan Directorate in the last few years. It has finally dawned upon the users as well as the beneficiaries that IT can unbelievably ease the storage & calls of data, compute figures accurately, eliminate repetition and overall increase efficiency of working even in a small cycle of activities. Through this scheme, the existing IT logistics shall be upgraded. IT based multi-utility machines will be provided which will contribute to a meaningful use of IT at all levels of the organization's strata. Further new computers & peripherals shall also be provided to propel use of IT completely.

R&D and Training

Doordarshan is a technology driven organization. Broadcasting is the core activity of Doordarshan and like any other organization which is dependent on the extremely fast changing technology; Doordarshan is also required to keep abreast with the latest changes in the technology. This is not just to walk hand in hand with the global trends in broadcasting but also to meet the ever compulsive demand to change. The state of preparedness to do so can only be ensured by strengthening the Research & Development (R&D) wing, which acts on behalf of the organization to set the standards of latest technology to be introduced and adopted in DD, in a time bound manner, whether it relates to production, transmission or up-linking hard wares.

Due to the fast changes in technology, the broadcast equipments being manufactured mostly abroad frequently undergo up-gradation and it is mandatory to have an operational & maintenance training to be imparted to the staff using these equipments to derive the maximum possible utility. Doordarshan has training institutes for imparting training to its staff periodically in a calendar year. However there is an essential need to augment the equipments and other logistics of a training institute to ensure that the trainees receive adequate and meaningful training

on the latest available broadcast equipments which will in turn benefit the organization.

In the 11th Plan, Doordarshan proposes to invest its plan capital for strengthening the only R&D wing situated in Delhi and the existing Staff Training Institutes [Technical] located at Delhi, Bhubaneswar & Lucknow.

The proposals have been prepared in this 11th Plan scheme by broadly categorizing into two components or sub-schemes as mentioned below:

a) R & D [Research & Development]

b) Training

The following paragraphs explaining the objectives, scopes and other desirable information shall focus on the above two broad titles only.

a) R & D [Research & Development]:-

- (i) Study and preparation of TV transmission coverage maps based on actual terrain condition .
- (ii) Providing Testing and measuring facility for Digital Terrestrial TV transmission [DTT & DVB-H], HDTV & Satellite TV .
- (iii) Strengthening of in-house prototype & production facility for R&D developed TV equipments/systems .
- (iv) Establishment of experimental IP computer network over DD satellite network and DTH platform for interconnectivity of DD archival centers located at the four Metro cities of India

b) Training:-

- (i) Providing digital studio production facility at 01 location comprising of camera chains with accessories, production switcher, audio console, CG, logo-generator, digital frame synchronizer, router, SPG, assorted microphones, studio lighting system, video server, monitoring wall and other peripherals etc. [including departmental works, installation & integration of materials and technical furniture, power supply, air-conditioning etc.] for conducting the training courses for programme & engineering personnel at Delhi.
 - (ii) Provision of ENG based field production facility at 3 locations for conducting of training courses for programme & engineering personnel at Delhi, Bhubaneswar & Lucknow.
 - (iii) Providing post production facility at 3 locations through NLEs, 3-D graphics, digital VCRs & other accessories etc. for conducting of training courses for programme & engineering personnel at Delhi, Bhubaneswar & Lucknow.
 - (iv) Setting up of digital video measurement & monitoring facility including test pattern generator etc. at 3 locations for conducting training courses for engineering personnel at Delhi, Bhubaneswar & Lucknow.
 - (v) Providing satellite broadcast equipments i/c measuring equipments for training purpose.
 - (vi) Providing equipments for upgrading the existing laboratory facilities at IIT Kanpur that is set-up for broadcasting training needs of Doordarshan.
 - (vii) 500 W VHF/UHF TV Transmitter in (1+1) auto mode [remote operation] along with input monitoring & associated equipments, satellite receiving equipments, miscellaneous equipments, power supply & air-conditioning, measuring equipments etc.
-
- (i) Study and preparation of TV transmission coverage maps based on actual terrain condition.

For optimal implementation of Digital TV broadcasting in the country, network and spectrum management is to be carried out in a scientific manner. For this purpose extensive and accurate propagation measurements are required to be carried out all over the country. In this regard R&D has to gear itself with state of the art equipment/system for propagation measurement and reception survey. The

assessment of the propagation parameters such as minimum usable field strength, carrier to noise ratio, BER are necessary for the network planning of digital TV broadcasting service in the country.

The project has been formulated with a view to assess the following propagation and planning parameters. (i) Evaluation of reception quality under different environmental conditions. (ii) Assessment of Building Penetration Loss and shadow loss. (iii) Assessment of reception quality under high-speed mobile conditions (iv) Estimation of carrier to interference ratio (v) Field strength measurements to evaluate the coverage area for satisfactory reception and planning parameter required for digital TV planning & (vi) preparation of maps based on the actual terrain conditions.

- (ii) Providing Testing and measuring facility for Digital Terrestrial TV transmission [DTT & DVB-H], HDTV & Satellite TV.

A high performance broadcast coverage system is proposed which will be integrated into a measurement vehicle, custom designed for taking all kinds of measurements needed for field strength survey for coverage and other propagation related studies for R&D purpose. This integrated system will be able to control the system components, collect, store and display the field strength data of the DVB-T/DVB-H/CW signal from test receiver, Position and display the location coordinates on the digital map of the targeted area with the help of GPS navigator.

- (iii) Strengthening of in-house prototype & production facility for R&D developed TV equipments/systems.

A large number of digital equipment and systems have already been introduced in the Doordarshan network for example Digital Terrestrial Transmission (DTT/DVB-H), studios, Earth Stations, Downlinks, DD Direct+ etc. Doordarshan has ambitious plans to introduce HDTV, IPTV and DVB-H in the future. There is a need to develop the standardized procedure for the measurement of digital equipment. For this purpose a digital test & measuring lab will be set up in the Research Department. Test and measuring facility are also, to be provided in Antenna Lab. for digital terrestrial TV antennas keeping in view the large scale introduction of Digital terrestrial transmission in near future.

The Production Center of R&D is responsible for large scale fabrication and production of various equipment and systems developed by the Research Department. In the past the Center has supplied large number of equipment for Doordarshan Kendras, HPT etc. Some of these equipments are (i) Transmitting & Receiving Antennas, (ii) Logo Generator (iii) Satellite based remote program switching system for unmanned LPTs (iv) VLPT Remote Monitoring Unit, etc. Apart from the production of equipment the Center is also responsible for fabrication of Prototype Units of the equipment/systems before finalizing design for large scale production. In addition, the Center is also responsible for repair and maintenance of various R&D equipments which are received from Doordarshan network from time to time. The equipment used in the assembly line, testing and measurements have become very old and obsolete. It is, therefore, proposed to replace such equipment with state of the art digital equipment.

- (iv) Establishment of experimental IP computer network over DD satellite network and DTH platform for interconnectivity of DD archival centers located at the four Metro cities of India.

Today Doordarshan has a digitalized TV network through Satellite uplinks at Delhi and Regional/State capitals and DTH DD Direct Plus uplinks at Todapur Delhi for providing 30 Channels of DD satellite channels and 50 Channels of DTH on its DD Direct Plus. Now the technologies and DVB standards have grown up such that it is possible to use the existing DD TV network to establish a full duplex IP computer network using the technique of IP over TS (MPE profile - Multiprotocol Encapsulation) under DVB data broadcast standard. It is possible to establish a dedicated Doordarshan IP network connecting all the DDKs having Satellite Uplinks. Under this project it is proposed to establish an experimental IP network using the above technique for interconnecting the digital Video Archival Centers at four Metros (Delhi, Mumbai, Kolkata and Chennai).

Under this plan of execution, DD will utilize the existing hardware infrastructure and available spare bandwidth of the DD Satellite TV network where the unutilized bandwidth is presently being filled up by Null packets. Since a full duplex IP network is being established, DD can implement all possible computer applications like exchange of Post production Video files of MPEG2 and MPEG4 of SD and HD, interlinking of DD Archival

etc. This IP network which will at present provide network connectivity among 4 DDKs at four Metros can be expanded to other DDKs at regional levels for interlinking their Archival centers easily in future.

Under this project it is planned to have tapeless workflow, multimedia platforms at all the major studio centers. Tapeless workflow will be achieved by using a SAN [Storage Area Network] system which is actually a mainframe server and can be accessed by separate users simultaneously for various functions such as online editing, archiving, content mixing, multimedia activities using the contents etc without using or exchange of contents on tapes/cassettes. Usage of tapes is limited to the outside news & productions only and the entire production in the studio is transferred into the SAN system tapelessly.

HDTV [High Definition Television] is a new technology using a digital platform. The report of the sub-group on Going Digital has mentioned in detail about this technology and the way it is envisaged to be introduced in this country. HDTV is under experimental stage in Doordarshan through a pilot project which was approved by the Planning Commission Under this project mentioned in this DPR, high definition production & post production facilities, terrestrial transmitters and uplink facilities shall be created for DD.

Through this project it is proposed to expand the TV services of DD by setting up new digital studio setup with production & post-production facilities at Udaipur in Rajasthan, Raiganj in North Bengal region of West Bengal, Rae-Bareilly in Uttar Pradesh, Aurangabad in Bihar & Aurangabad in Maharashtra. The details and justification of the items proposed above have been elaborated below one by one.

(A) Augmenting the Doordarshan studio network by providing a new digital studio setup facility at Raiganj in West Bengal.

(B) Augmenting the Doordarshan studio network by providing a new digital TV studio facility at Rae Bareilly in Uttar Pradesh.

(C) Augmenting the Doordarshan studio network by providing a new digital TV studio facility at Aurangabad in Bihar.

(D) Augmenting the Doordarshan studio network by providing a new digital TV studio facility at Udaipur in Rajasthan.

(E) Augmenting the Doordarshan studio network by providing a new TV studio facility at Aurangabad in Maharashtra.

3. Modernization, Augmentation & Replacement of Satellite Broadcast Equipment

There is a scheme for “Modernization, Augmentation & Replacement of Satellite Broadcast Equipment”. The scheme has been formulated for complete digitalization of satellite uplink in the DD network. The details of the present proposal item-wise is discussed below

- 1 . Upgrading of Earth Stations
- 2 Replacement of Earth station Compression Equipments
- 3 Providing VSAT terminals
- 4 Upgrading of 10 regional centers of VSAT terminals
- 5 Expansion of VSAT hub at Delhi
- 6 Replacement of DSNG units
- 7 Providing New DSNG Terminals
- 8 Replacement of IRDs with DVB S-2 based IRDs
- 9 Replacement of Uplink PDAs and accessories
- 10 Providing New Earth station
- 11 Upgradation of Carrier Monitoring Station at Todapur
- 12 Remote Switching facilities at VLPTs

The above 12 projects are explained below one by one for better understanding their justification and need.

1 Upgrading of Earth Stations

18 Nos. of existing earth stations will be upgraded. At present 18 state capital earth stations in 2+1 mode are running with current state of the art compression

equipments. These equipments will complete its life, and also the existing compression algorithm will become older and inefficient. So the OEM(Original Equipment manufacturer) will stop supplying spares and service support due to obsolescence. Hence, under this scheme it is proposed to upgrade the earth stations by replacing the compression system, base band (from analogue to digital), PDA and RF equipments with new models with advanced features and software.

2 Replacement of Earth station Compression Equipments

Present earth stations running with current state of the art compression equipments will complete its life, and also the existing the compression algorithm will become older and inefficient. So the OEMs will stop giving spare and service support due to obsolescence. Hence, under this scheme it is proposed to upgrade the earth stations by replacing the compression system at 5 places.

3. Providing VSAT terminals

There is a need to install more VSAT terminals at many stations, in addition to the already 120 locations being undertaken across the country for collection of News feeds in shortest possible time. These additional terminals will work with the already proposed VSAT Hub with Upgradation. These terminals will provide additional services for intranet and VoIP etc. These terminals will be provided at District headquarters for News Feeds. VSATs will be provided at 473 locations more in this project.

4 Upgrading of 10 regional centers of VSAT terminals

As the number of VSAT terminals increases in states there will be a requirement of additional hardware and software at DDKs located in state capitals. To meet this requirement under this scheme it is proposed to upgrade receiving, decoding, storage and routing infrastructure at 10 stations.

5 Expansion of VSAT hub at Delhi

As the number of VSAT terminals increases there will be a requirement of additional hardware and software at the VSAT Hub. To meet these requirements under this scheme, it is proposed to upgrade receiving, decoding, storage and routing infrastructure at Hub earth station at Todapur in Delhi.

6 Replacement of DSNG units

7 [Seven] DSNG units that need to be upgraded will be replaced with new DSNG vans (1+1 mode) with advanced features and software, after they have served their useful life and the compression algorithm becomes old & inefficient.

7. Proving New DSNG Terminals

At present DD is having DSNGs stationed at major DDKs in some of the state capitals. For expansion of news contribution links under this scheme it is proposed to provide one C-band DSNG Van (1+1 mode), with advanced compression and modulation equipments, each at remaining state capitals and other major stations for coverage of news and other programs. 11 DSNG terminals will be provided through this project.

8 Replacement of IRDs with DVB S-2 based IRDs

Based on the request of DOS(Department of Space) to improve bandwidth efficiency by using better compression and modulation in satellite communication, Doordarshan has already prepared a road map to achieve it in a phased manner. As a first step in 11th plan, DSNGs and contribution links are to be implemented using DVB-S2 standard and replacement of some of the IRDs with DVB-S2 technology. This will help in reduction in band width and saving operational cost. The remaining Existing IRDs will be required to be replaced by DVB-S2 technology as the New DSNGs, Earth stations and Upgradation of Earth stations will come up with DVB-S2.

9 Replacement of Uplink PDAs and accessories

Earth stations having Old PDAs at 8 locations will be required to be replaced with NEW PDA system as per new IR/GR guidelines.

10. Providing New Earth station

At present at least one earth station has been provided in each state i.e. at state capital and co-sited with DDK. Very often there are demands for more earth stations in every state where PGFs are functioning. Under this scheme it is proposed to keep a provision of 2 channel uplink facility where PGF are functioning. As such 20 new earth stations will be provided through this project.

11 Upgradation of Carrier Monitoring Station at Todapur

The Carrier monitoring Earth station being implemented for monitoring of satellite services uplinked for Earth station will need to be upgraded for inclusion of monitoring facilities of carriers due to change in compression & modulation technologies for better efficiency and new services from new earth stations.

12 . Remote Switching facilities at VLPTs

In this project, facilities will be provided to the controlling stations of the VLPTs for switching on and off the remotely located VLPTs via satellite link. These VLPTs are unmanned and wherever more than one programme channel is to be telecast from the transmitter, a changeover is required and therefore remote switching is essential. Also in case of any breakdown, the standby unit of the transmitter can be switched on from remote using this facility.

8. Stagnation of IB(E)S Cadre:

It may be seen from the chart given below that there is a stagnation in all the engineering cadres, the details of which are given below:

Brief of the stagnation in promotions of JTS & STS grades(as on April, 2007):

Sl. No.	Batch of the direct recruit under IB(E)S (After IB(E)S group 'A' organized service came into existence in 1981)	Next promotion- Max. Period (From JTS to STS) (Minimum of Pay scale; From 8,000 to 10,000) (approx.)	Further next Promotion Period (From STS to NFJAG) (Minimum of Pay scale; From 10,000 to 12,000) (approx.)	Further next Promotion Period (approx.) (Standard period; 13 Years) (From JTS to JAG) (Minimum Pay scale ; From 8,000 to 14,300)
1	IES-IB(E)S-1985	2-3 years	6 years	19 years
2	IES-IB(E)S-1986	2-3 years	6 years	20 years
3	IES-IB(E)S-1987	2-3 years	6 years	19 years
4	IES-IB(E)S-1988 (Regular)	7 years	7 years	Yet to be given
5	IES-IB(E)S-1989	7&1/2 years	About 8-9 years	Yet to be given
6	IES-IB(E)S-1990	12 years	Yet to be given	Yet to be given

Brief of the stagnation in promotion of JAG & SAG cadre(upto 07.05. 2007):

Sl. No.	Batch of the direct recruit under IB(E)S Cadre- Junior most promoted	From JAG to SAG (Minimum of Pay scale; From 14,300 to 18,400) (approx.)	From SAG to HAG) (Minimum Pay scale; From 18,400 to 22,400) (approx.)
1	IES-IB(E)S-1971	Promoted	Yet to be promoted
2	IES-IB(E)S-1972	Yet to be promoted*	Yet to be promoted
3	IES-IB(E)S-1973	Yet to be promoted*	Yet to be promoted
4	IES-IB(E)S-1974	Yet to be promoted*	Yet to be promoted

The IB(E)S was formed in 1981. However, no cadre review has taken place in the last 28 years whereas in other departments/organizations, it has been done regularly for removing stagnation and better work efficiently as shown in table below:

LAST CADRE REVIEW OF CENTRAL TECHNICAL SERVICES (As per the DOPT):

Sl.No.	Name and Cadre Controlling Authority of the Service	Year of last cadre review

MINISTRY OF COMMERCE & INDUSTRY		
1.	Indian Inspection Service	1988
2.	Indian Supply Service	1988
MINISTRY OF COMMUNICATIONS & INFORMATION TECHNOLOGY		
3.	Indian Telecommunication Service	1988
4.	P&T Building Works Service (Architectural, Electrical & Civil Wing)	1989
MINISTRY OF DEFENCE		
5.	Border Roads Engg. Service (E&M Cadre)	1999
6.	Indian Naval Armament Service	1987
7.	Indian Ordnance Factories Service	1990
8.	Indian Defence Service of Engineers.	2000
MINISTRY OF POWER		
9.	Central Power Engineering Service	1990
MINISTRY OF INFORMATION & BROADCASTING		
10.	<u>Indian Broadcasting (Engg.) Service *</u>	<u>1981*</u>
11	Indian Information Service	2006
MINISTRY OF RAILWAYS		
12.	Indian Railway Service of Elec. Engg.	2003 (4 th)
13.	Indian Railway Service of Engineers	2005 (4 th)
14.	Indian Railway Service of Mechanical Engineers	2003 (4 th)
15.	Indian Railway Service of Signal & Telecommunication Engineers	2004 (4 th)
16.	Indian Railway Stores Service	2004 (4 th)
MINISTRY OF ROAD TRANSPORT & HIGHWAYS		
17.	Central Engg. Service (Roads)	1990
MINISTRY OF URBAN DEVELOPMENT & POVERTY ALLEVIATION		
18.	Central Architects Service (CPWD)	1989
19.	Central Elect. & Mech. Engineering Service (CPWD)	1995
19.	Central Engg. Service (CPWD)	1995
MINISTRY OF WATER RESOURCES		
20.	Central Water Engineering Service	1991

Cadre structure and the comparative structural ratio for different engineering services funded by the central Govt. (in % of the total strength) as on July, 2006):

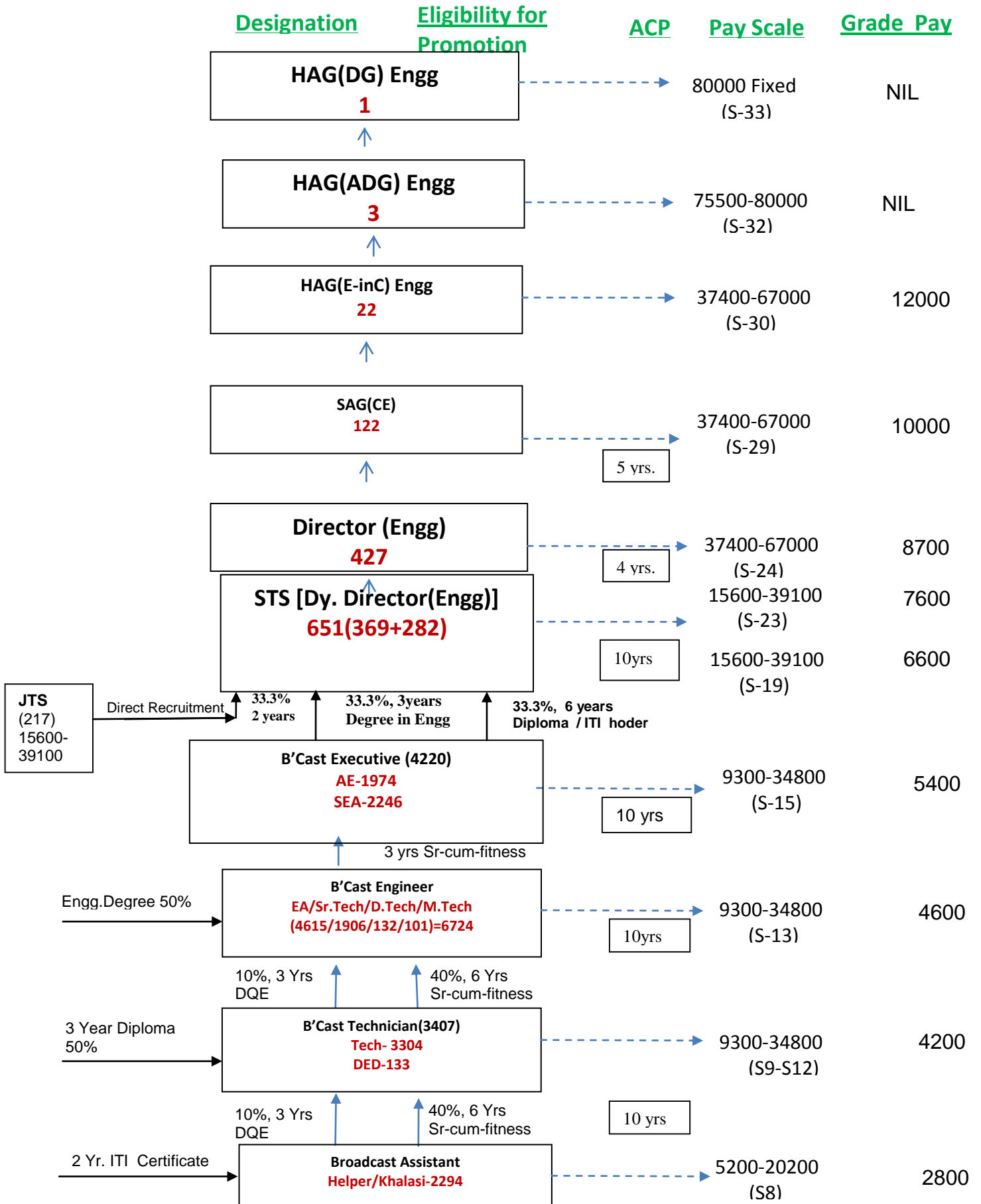
Sl. No.	Services	HAG (Above AS level)	HAG (AS level)	SAG	JAG	STS	JTS	Total
1	IRS(S&TE)	0.54	1.19	12.97	37.84	38.81	8.65	100
2	IRSEE	0.66	2.54	15.55	39.25	30.98	11.03	100
3	IRSE	0.39	1.89	13.01	37.37	37.76	9.57	100
4	IRSME	1.28	2.93	16.41	40.60	28.87	9.90	100
5	IRSS	0.32	1.46	12.64	39.38	37.76	8.43	100
6	ITS	0.05	0.90	5.90	15.25	68.16	9.74	100
7	CES (CPWD)	0.35	0.81	4.65	18.26	66.63	9.30	100
8	CES (Roads)	0.48	0.97	7.25	28.99	42.03	20.29	100
9	IOFS	0.60	0.66	13.49	29.64	36.51	19.10	100
	Average of the services at Sl.No. 1 to 9	0.52	1.48	11.32	31.84	43.06	11.78	100
	As per the recommendation of the 5 th CPC,	3		17	50(20+30)	30		100
	IB(E)S-Existing	---	0.14	1.49	9.71	39.71	48.95	100
	IB(E)S-Proposed	0.21	1.52	8.84	29.48	44.96	14.99	100

9. Proposed cadre review/structure for IB(E)S Group 'A'(AIR+DD):

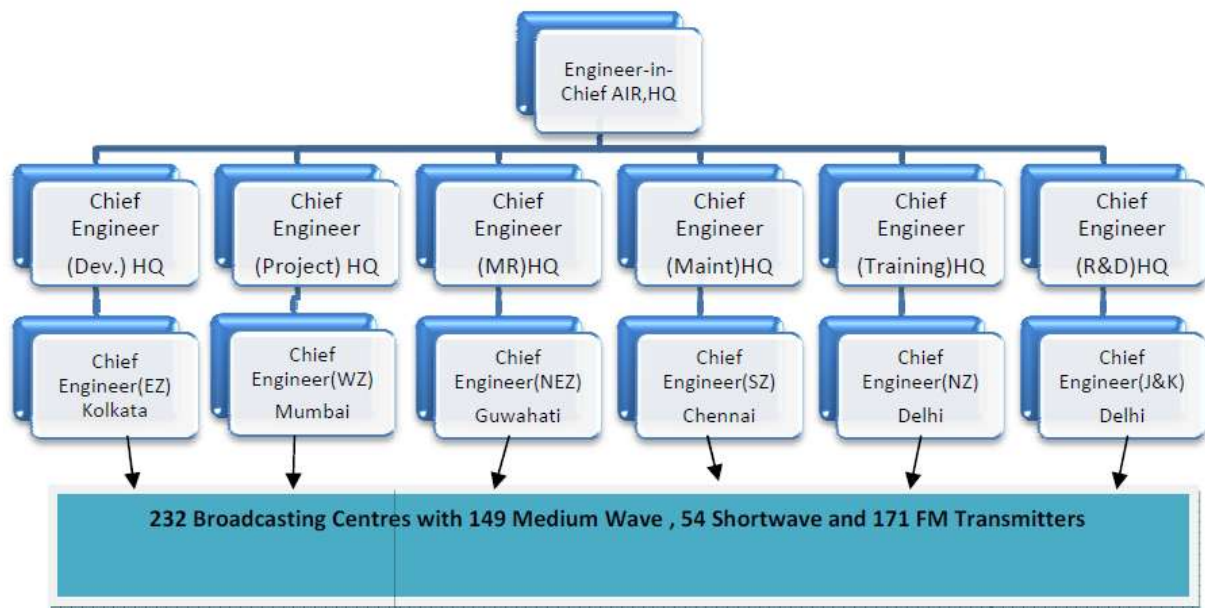
Sl. No	Designation, pay scale and grade pay as per the 6 th CPC (Amount in Rs)	Recommended Strength & (%) as per 5 th CPC	Average of 9 Nos. of Central Tech. /Engineering Services in % (Year 2006)	Existing Strength & (%)	Proposed Strength & (%)	Variation from existing (Nos.)
1	HAG {DG (Engg.)}* (80,000 Fixed)	44 (3%) for (Sl.No.1+2+3)	0.52%	Nil	1 (0.07%)	+1
2	HAG{Addl. DG(Engg.)}* (75,000- 80,000)			Nil	3 (0.20%)	+3
3	HAG (E-in-C) (37,400-67,000 with Grade pay; 12,000)			<u>1.48%</u> (2.00)	2 (0.14%)	<u>22 (1.49%)</u> 25 (1.73%)
4	SAG (CE) (37,400-67,000 with Grade pay; 10,000)	246 (17%)	11.32%	22 (1.49%)	122 (8.42%)	+100
5	JAG(Director) (37,400-67,000 with Grade pay; 8,700)	724(50%)	31.84%	143(9.71%)	427 (29.48%)	+284
6	STS (Selection Grade)/ NFJAG (DDE) (15,600-39,100 with Grade pay; 7,600)	Nil	Nil	226 (15.34%)	369 (25.48%)	+143
7	STS (DDE) (15,600-39,100 with Grade pay; 6,600)	434(30%) for Sl. No. 7+8	43.06%	<u>359 (24.37%)</u> 585 (39.71%)	<u>282 (19.48%)</u> 651 (44.96%)	<u>-77</u> +66
8	JTS (ADE) (15,600-39,100 with Grade pay; 5,400)	--	11.78%	721 (48.95%)	217(15.00%)	-504
	Total Strength {IB(E)S}	1473 (100%)	100 %	1473 (100 %)	1448 (100 %)	-25

Any organized service is sustained by the fresh, young, energetic and technical savvy JTS direct recruits, who are inducted in the Department in good number every year and who, after two years of service, are elevated to the STS level against 50% or more of the vacancies in the STS cadre. They are the torch bearers of the new technology and innovation and their role is supreme in the emerging competition from private operators. However their quota of promotion to the STS level, has been proposed to be brought down from 50% to 33.3% in order to mitigate the suffering of the AEs who have been denied promotion for too long on account of their not possessing a degree in engineering in a joint proposal submitted by the Association of Radio & TV Engineering Employees, All India Radio & Doordarshan Technical Employees Association, All India Radio & Doordarshan Engineers Association and All India Akashvani Group "D" Employees Association for the re-organization and restructuring of the engineering cadres of AIR and Doordarshan, from Helper to E-in-C. Although the ADTEA wants an upward revision in the number of posts proposed at JTS and STS levels, all the above four Associations have jointly agreed to the proposed re-structuring plan, shown on the next page, with full mandate from the majority of their members and their respective governing councils as stated by the respective office bearers of the Associations. The proposed organizational restructuring and re-structuring of the engineering wings of AIR & DD are shown on the successive pages:

10. Proposed Model Structure:



EXISTING ORGANIZATION STRUCTURE OF ENGINEERING WING IN ALL INDIA RADIO



Restructuring and optimum utilization of the organization's resources:

The two Departments have been functioning independently over a period of time. A tremendous opportunity lies for jointly utilizing the land, building, technical facilities and human resources to the mutual advantage of both the organization. Hence it is proposed to re-organize the two organizations and utilize the common resources to save expenditure and achieve better efficiency/synergy. Both AIR and Doordarshan have land, building, manpower and other resources at their disposal. For example, AIR has considerable land and building resources at most of the broadcast and transmitting stations, while Doordarshan network, at many places, is functioning from rented buildings. It is proposed to utilize the land, building and other resources of AIR network for Doordarshan set up and vice-versa. For example there could be a common tower for transmitting FM and TV signals. There is a tremendous shortage of staff. It is also proposed to utilize the manpower resources collectively for both the organizations so that with the existing

manpower, both the set ups can be managed efficiently. The future expansion and planning should be done jointly. This can happen only if certain functions are merged. While it may not be possible to amalgamate the working of the two departments at operational and supervisory levels, efforts towards an amalgamation of management tasks can bring better synergy, save costs and increase the efficiency. The organizational set up for promoting synergy and optimization of engineering resources has been worked taking in to account the synergy aspect, which is as under:

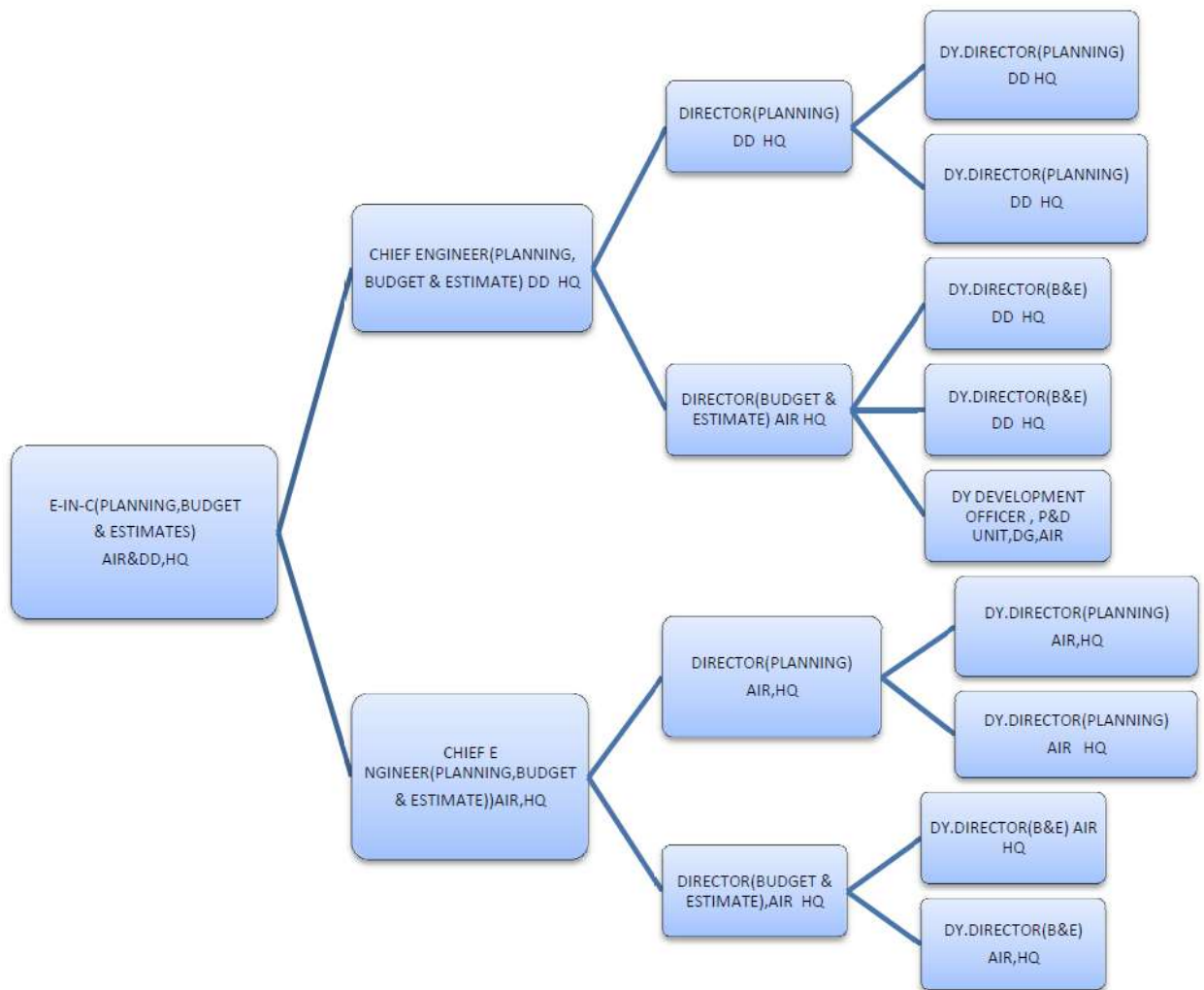
There will be a Director General (Engg.), AIR & Doordarshan, who will be the overall engineering head of the entire AIR and DD network. DG(Engg) shall be assisted by two Additional Director Generals. The two ADGs will be assisted by 22 Engineer-in-Chiefs. There will be altogether 128 officers in the SAG grade . Apart from the central and zonal headquarters, officers of the SAG grade are proposed to be deployed at 55 area headquarters in an attempt to decentralize the working of the engineering divisions of AIR and Doordarshan. These SAG grade officers will be responsible for inspection, monitoring and streamlining the maintenance activities for a cluster of AIR and TV stations under their control and the problems of running and maintaining the complex broadcast facilities need not be always referred to the central and zonal levels for solutions. The Chief Engineers assisted by Directors deputed at the area headquarters will ensure broadcasting at par with the highest world standards. The area Chief Engineers shall make use of the middle level and junior level officers already deployed at the AIR/DD station located at the area HQ. The area Chief Engineers shall conduct regular inspections and shall have the authority to approve the urgent requirements for maintaining excellent broadcast standards.

The DG(Engineering), AIR & DD shall be assisted by three ADGs: the first shall be designated as ADG(Project), AIR & DD, the second shall be designated as ADG(Operation & Maintenance)AIR & DD and the third shall be designated as ADG (HRD, Training and R&D). The detailed re-structuring and re-organizational plans are as shown on the following pages:

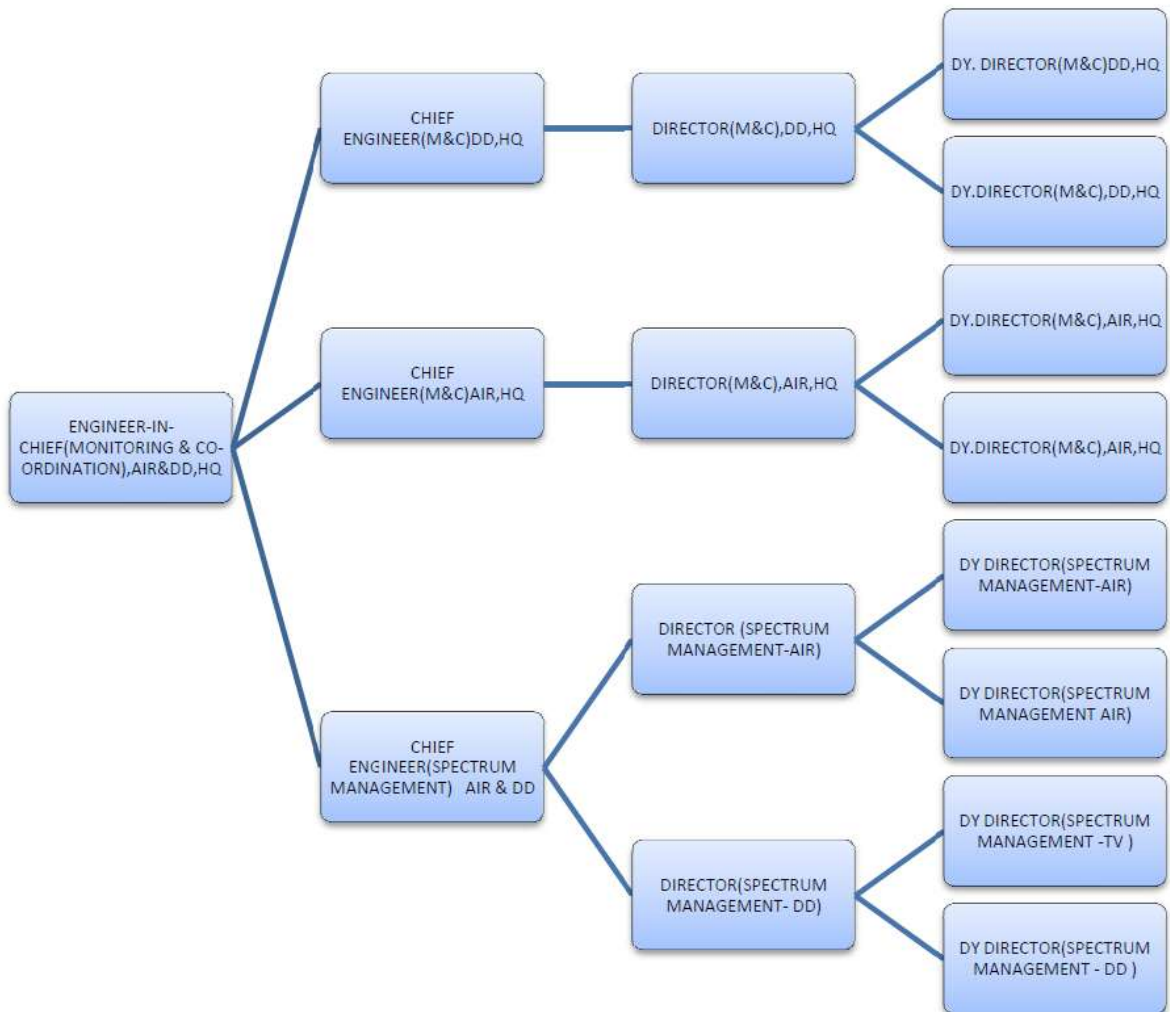
PROPOSED RESTRUCTURING OF ENGINEERING WINGS OF ALL INDIA RADIO & DOORDARSHAN AT CENTRAL LEVEL



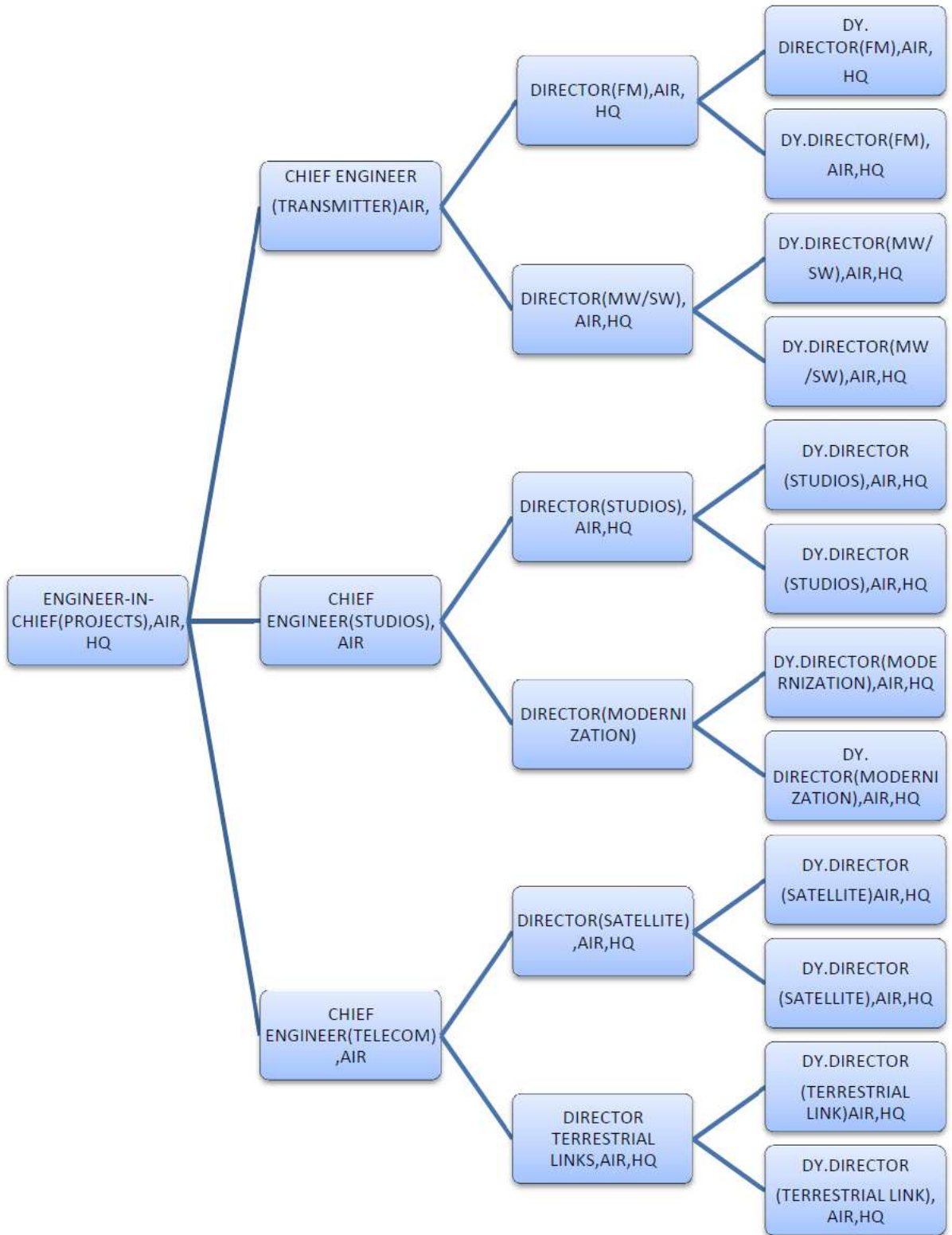
PROPOSED RESTRUCTURING OF PLANNING, BUDGET & ESTIMATE FUNCTIONS OF AIR & DOORDARSHAN AT CENTRAL LEVEL



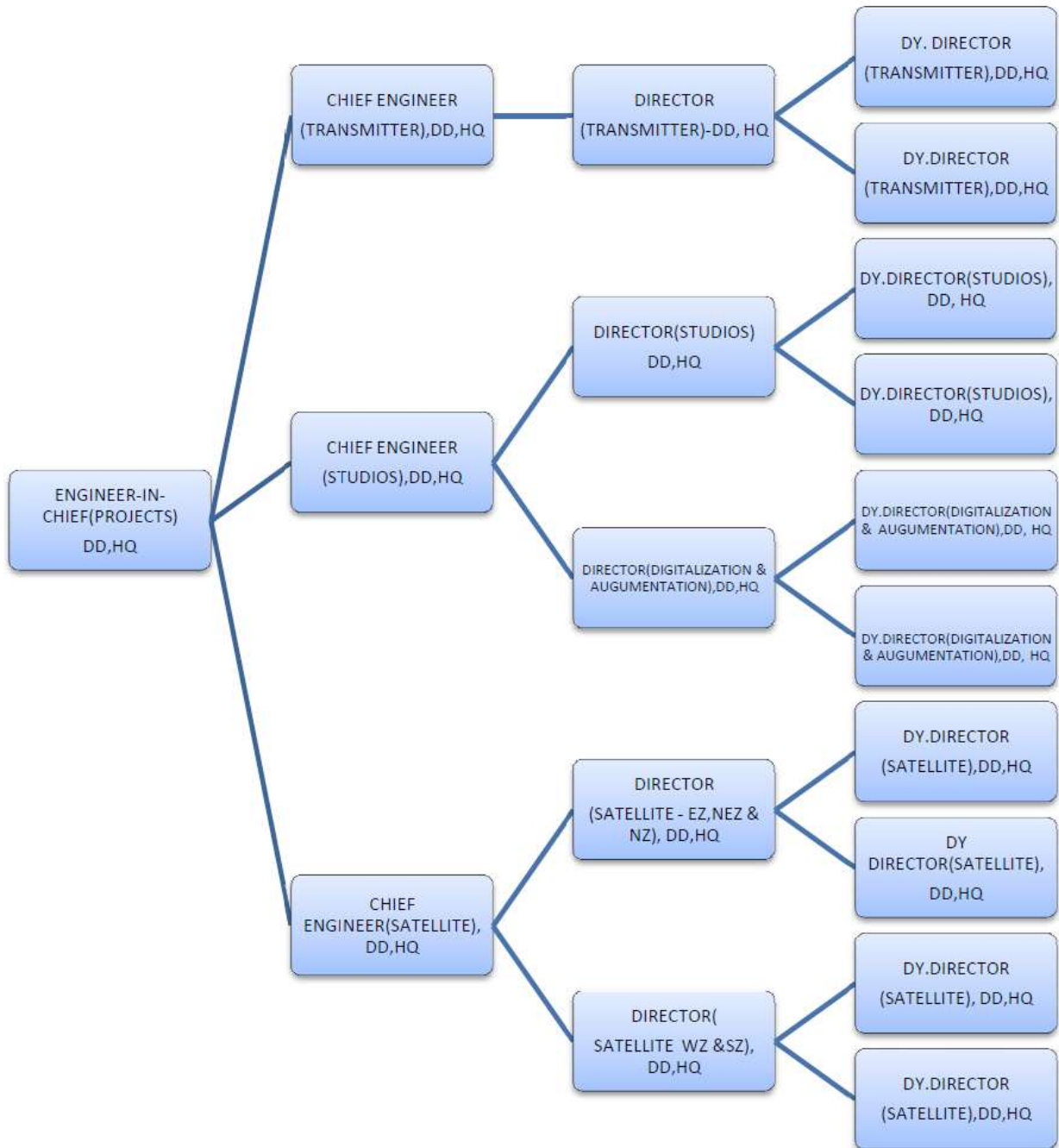
PROPOSED RESTRUCTURING OF MONITORING & CO-ORDINATION FUNCTIONS OF AIR & DOORDARSHAN AT CENTRAL LEVEL



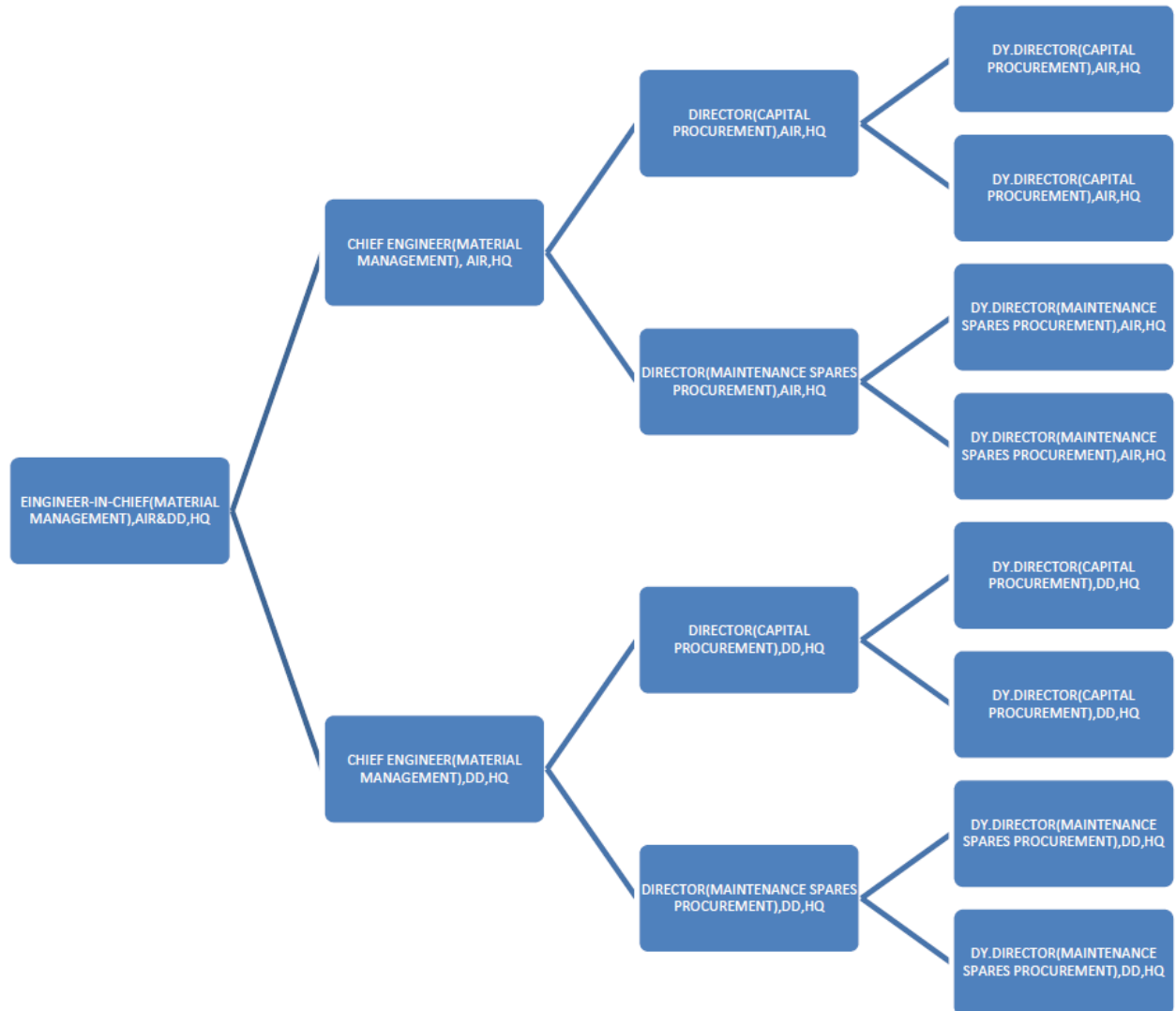
PROPOSED RESTRUCTURING OF PROJECT IMPLEMENTATION OF AIR AT CENTRAL LEVEL



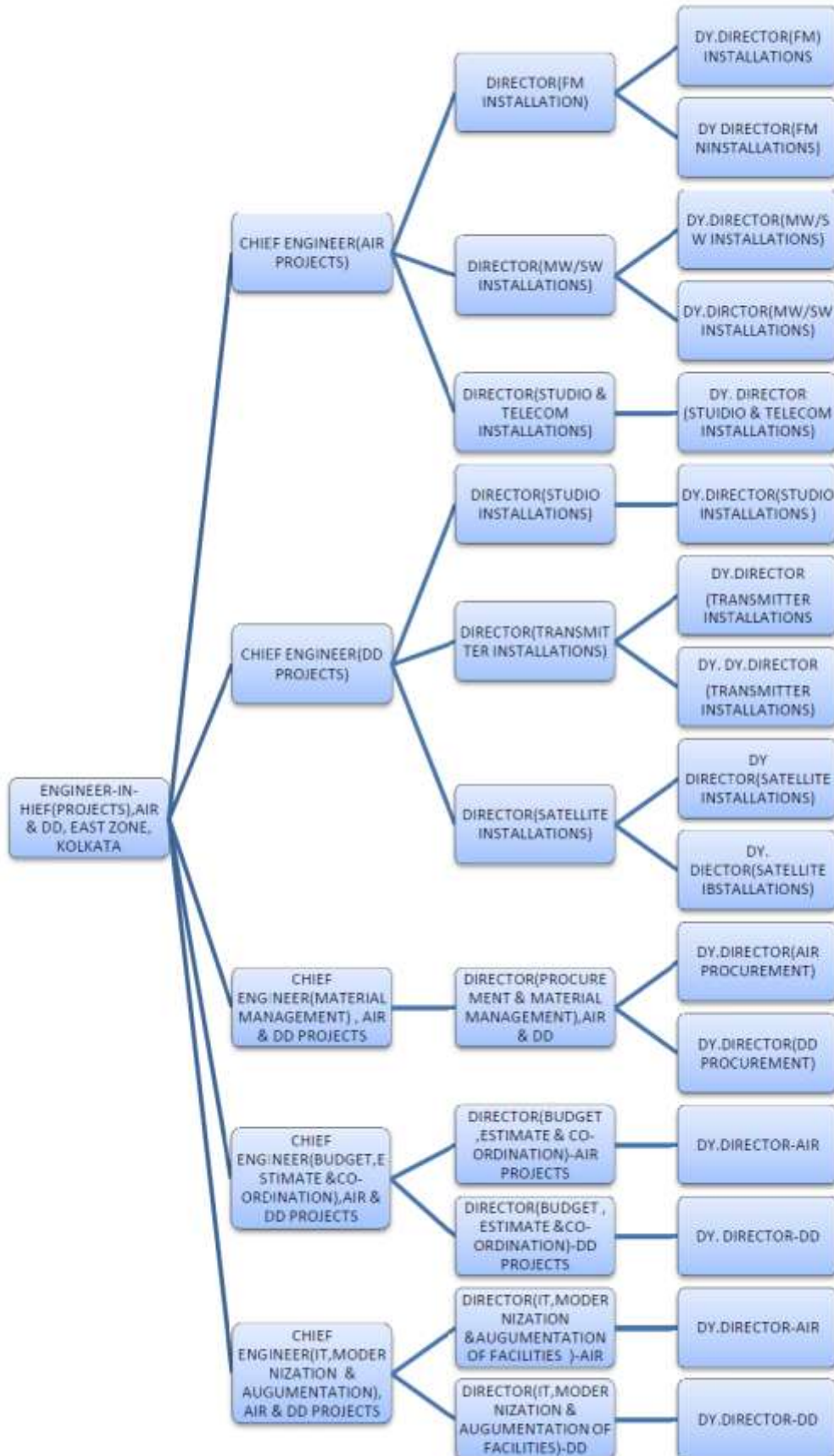
PROPOSED RESTRUCTURING OF PROJECT IMPLEMENTATION OF DOORDARSHAN AT CENTRAL LEVEL



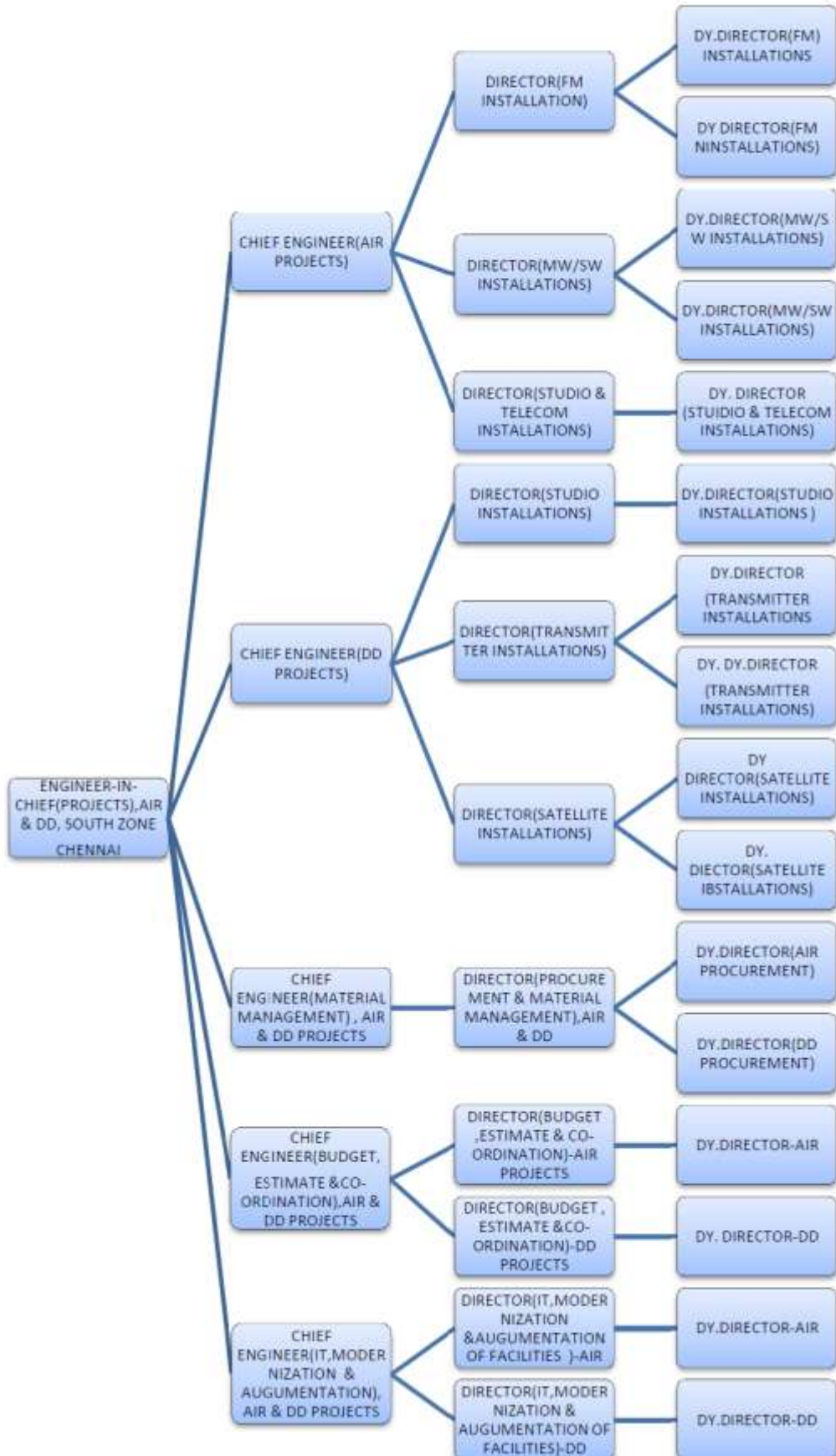
PROPOSED RESTRUCTURING OF MATERIAL MANAGEMENT FUNCTIONS OF ALL INDIA RADIO & DOORDARSHAN AT CENTRAL LEVEL



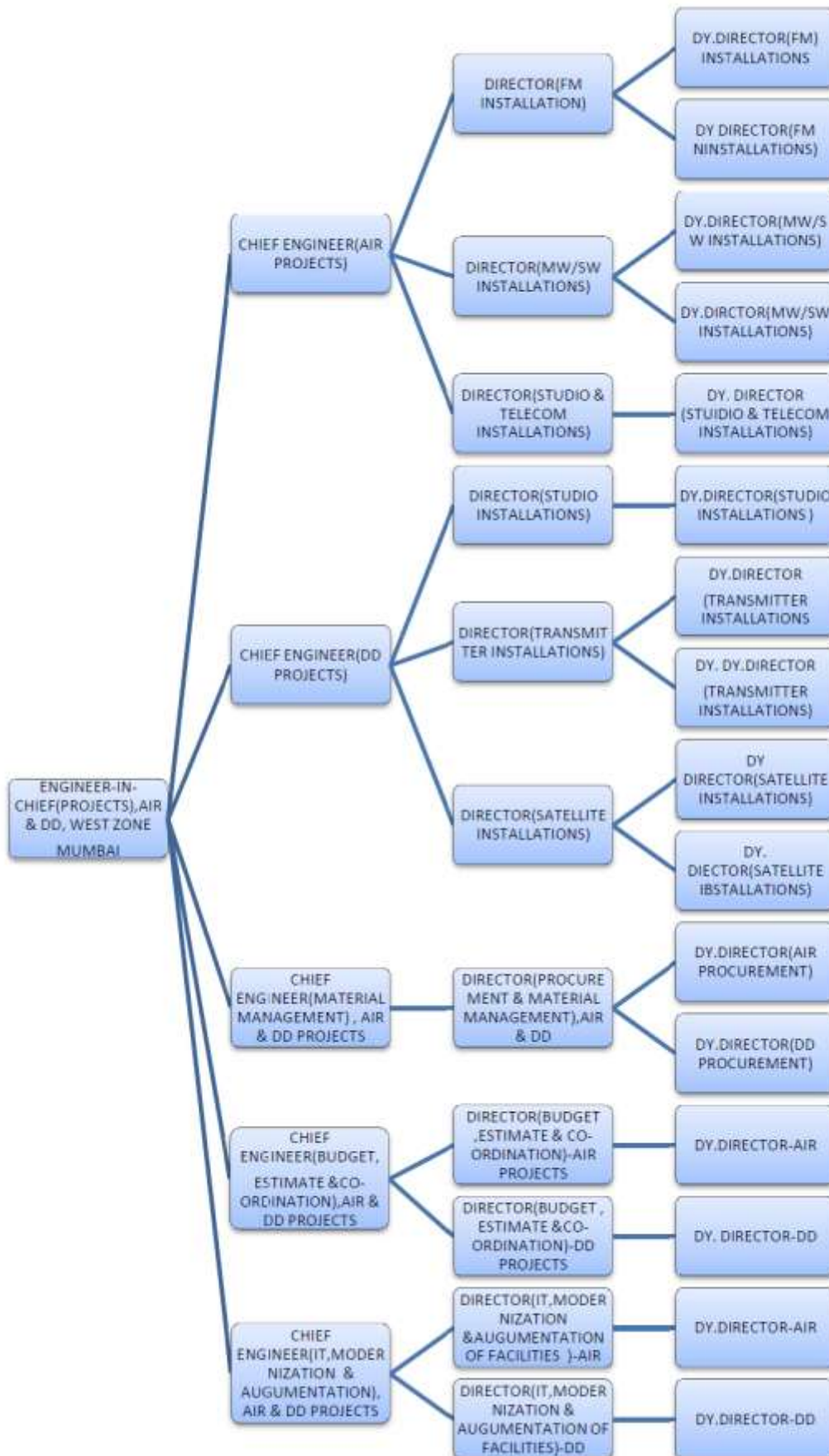
PROPOSED RESTUCTURING OF ZONAL PROJECT HQ OF AIR & DOORDARSHAN EAST
ZONE KOLKATA



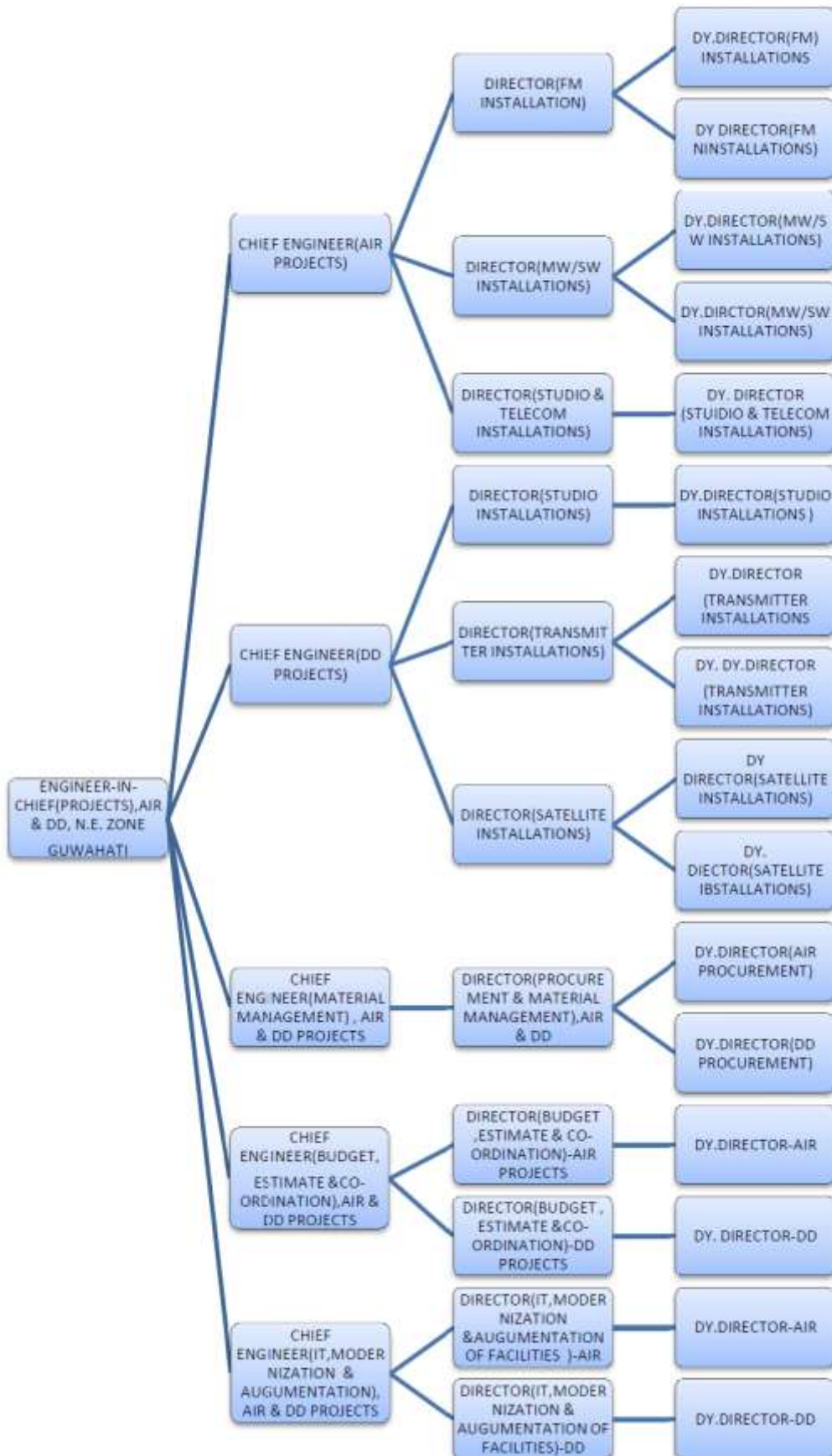
PROPOSED RESTUCTURING OF ZONAL PROJECT HQ OF AIR & DOORDARSHAN SOUTH ZONE CHENNAI



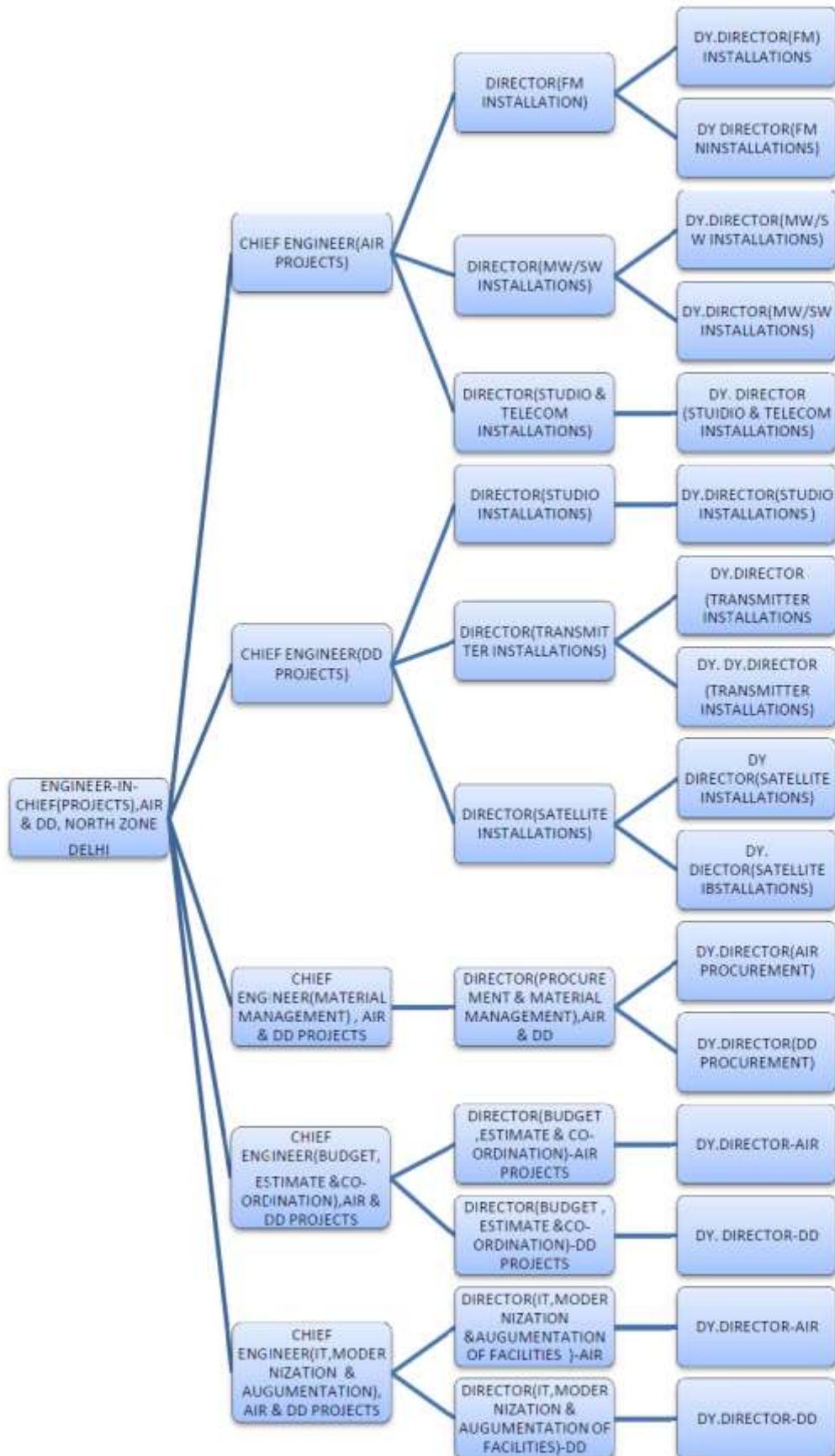
PROPOSED RESTUCTURING OF ZONAL PROJECT HQ OF AIR & DOORDARSHAN WEST ZONE MUMBAI



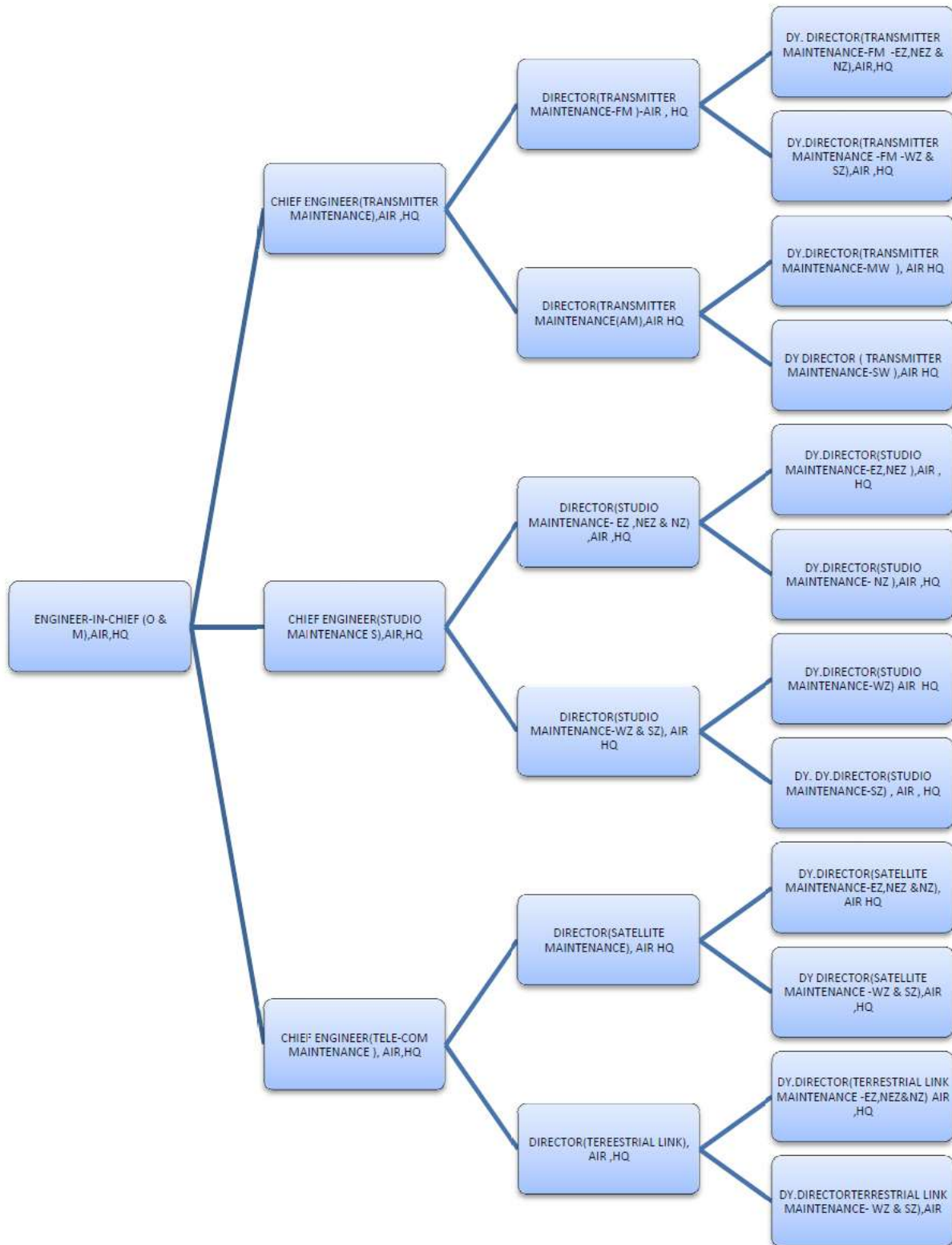
PROPOSED RESTUCTURING OF ZONAL PROJECT HQ OF AIR & DOORDARSHAN
NORTH EAST ZONE GUWAHATI



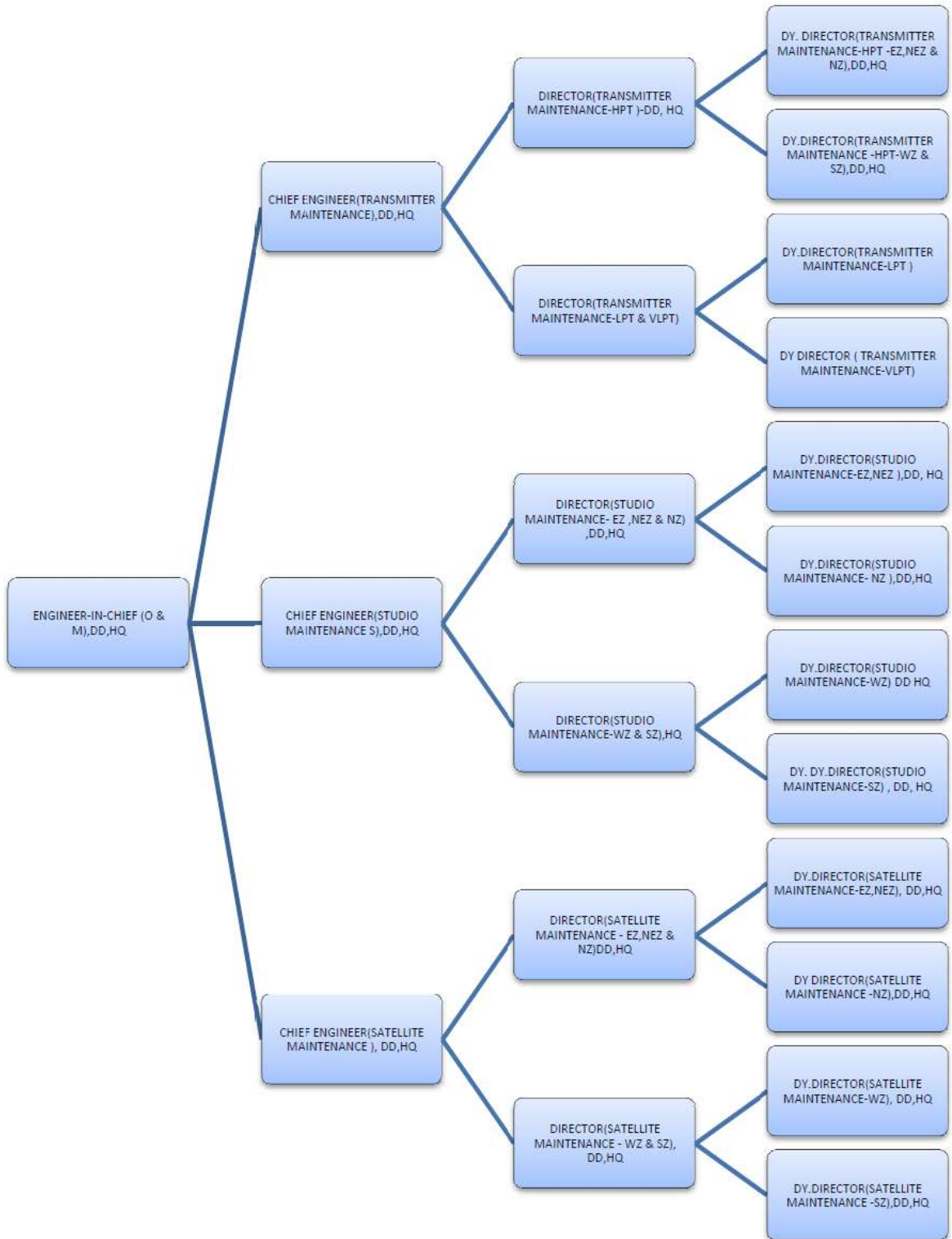
PROPOSED RESTUCTURING OF ZONAL PROJECT HQ OF AIR & DOORDARSHAN
NORTH ZONE DELHI



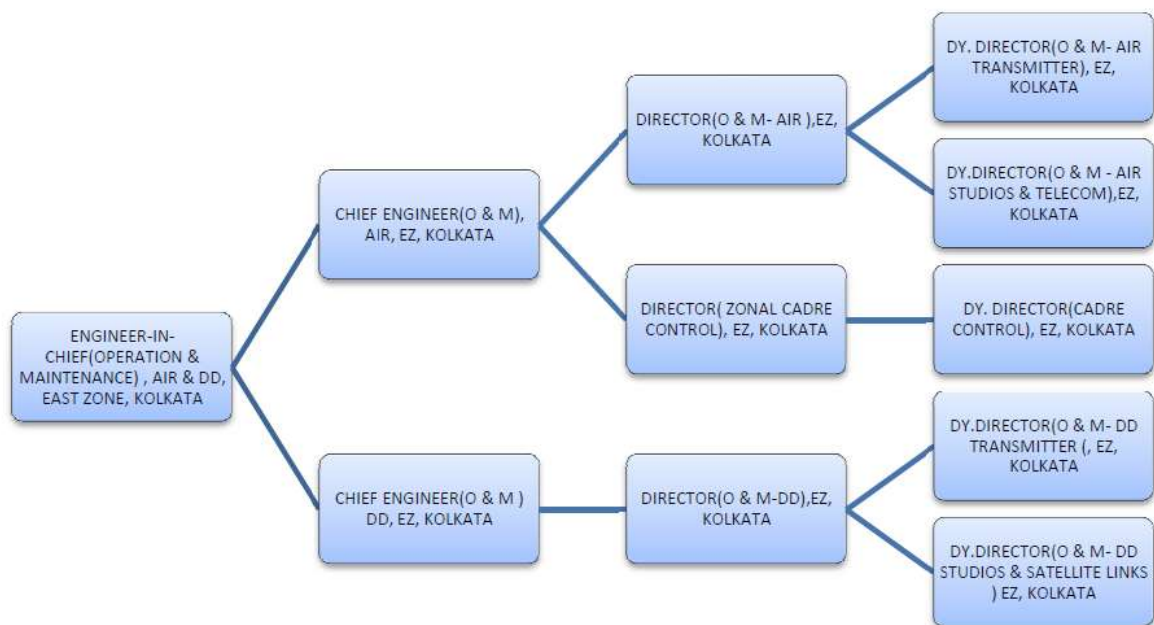
PROPOSED RESTUCTURING OF OPERATION & MAINTENANCE FUNCTIONS OF AIR AT CENTRAL LEVEL



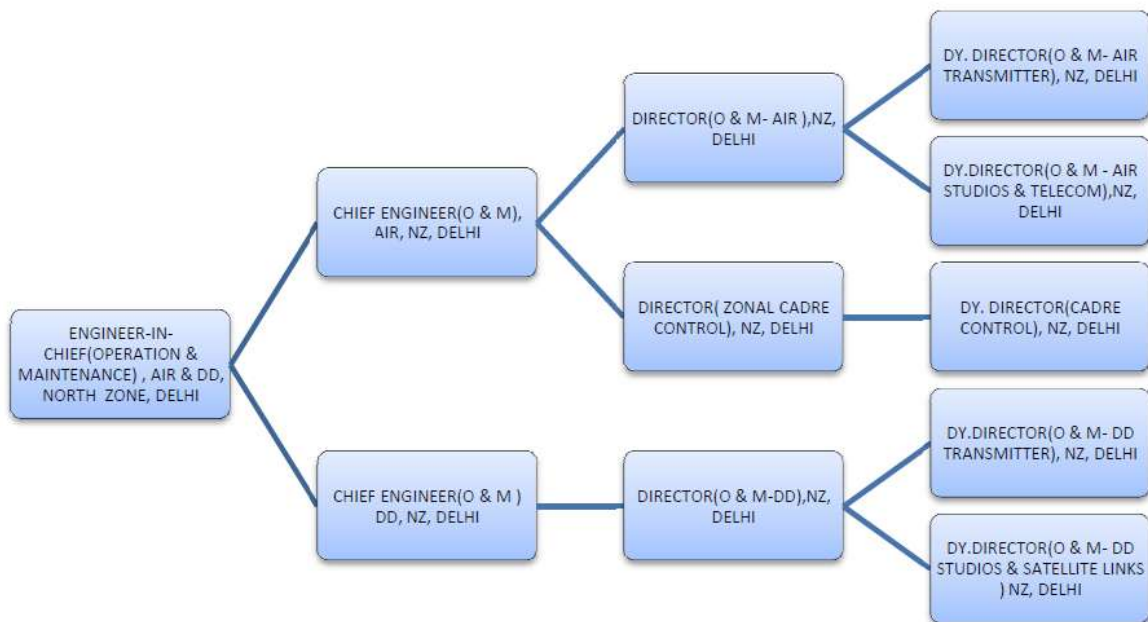
PROPOSED RESTRUCTURING OF OPERATION & MAINTENANCE HQ OF DOORDARSHAN AT CENTRAL LEVEL



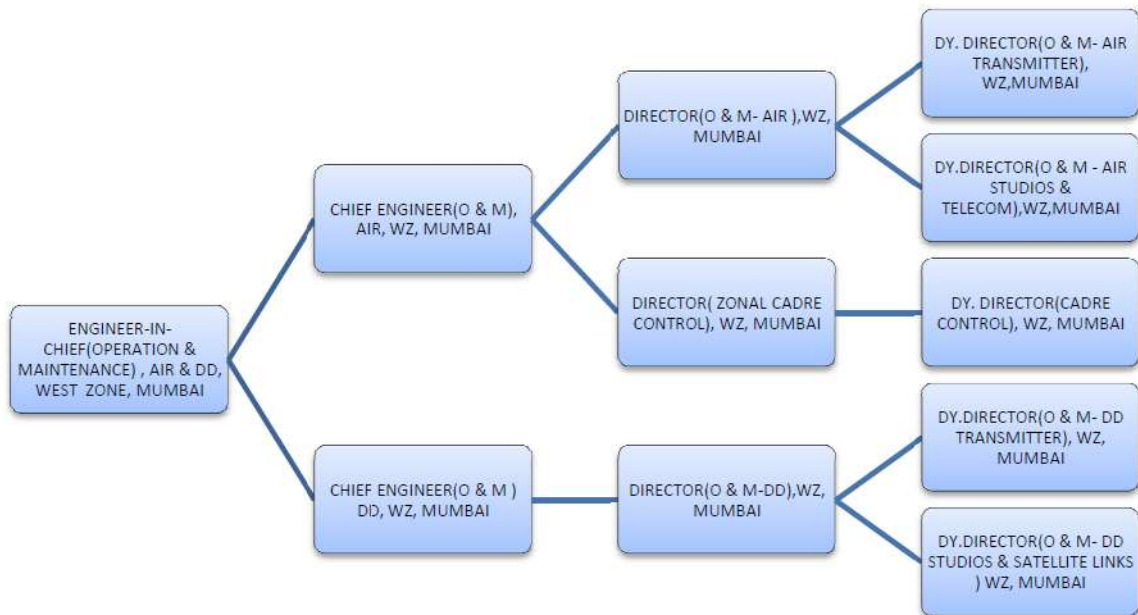
PROPOSED RESTUCTURING OF OPERATION & MAINTENANCE FUNCTIONS OF AIR & DOORDARSHAN, EAST ZONE KOLKATA



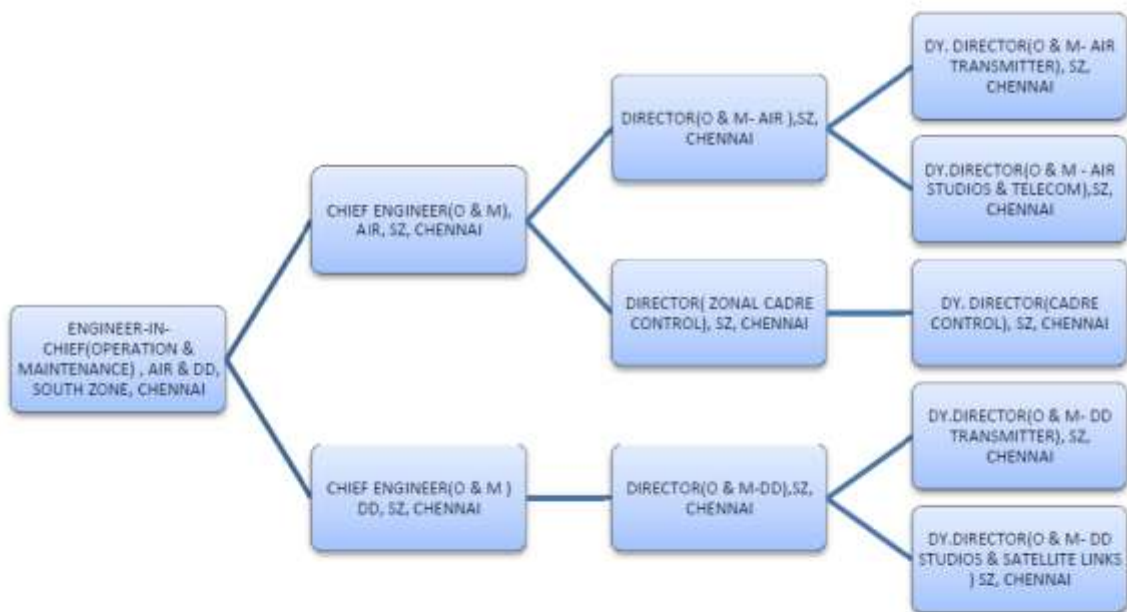
PROPOSED ZONAL OPEARTION & MAINTEANANCE HQ OF AIR & DOORDARSHAN , NORTH ZONE DELHI



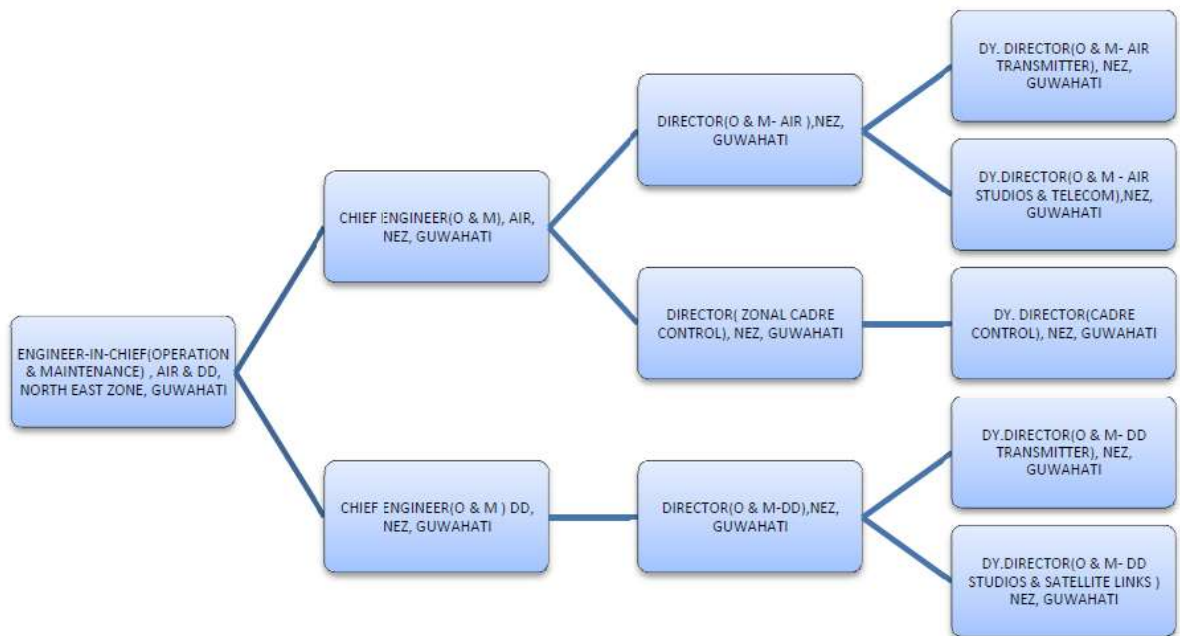
PROPOSED RESTRUCTURING OF ZONAL OPERATION & MAINTENANCE HQ OF WEST ZONE, MUMBAI



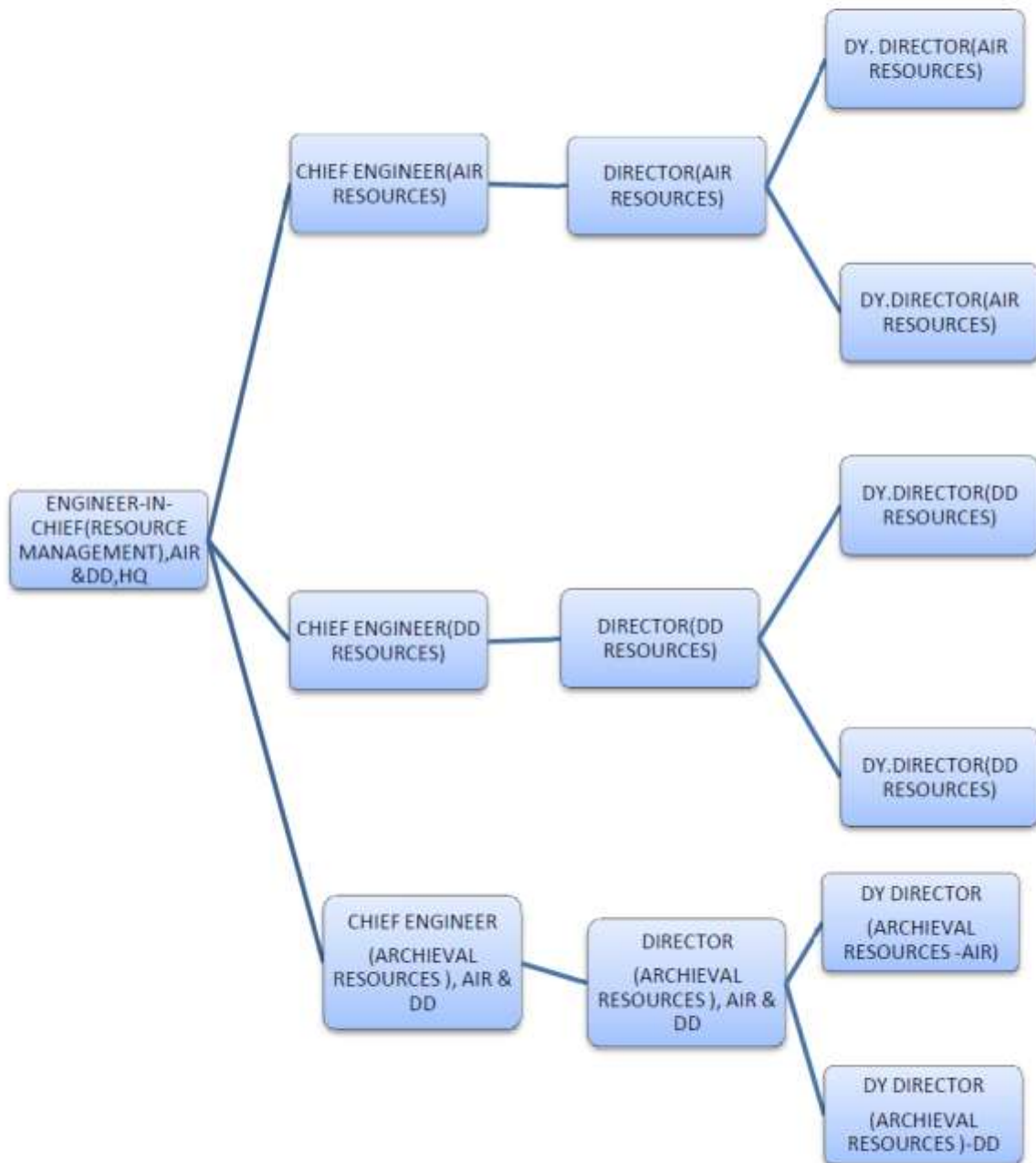
PROPOSED RESTRUCTURING OF ZONAL OPERATION & MAINTENANCE HQ OF AIR & DD
SOUTH ZONE CHENNAI



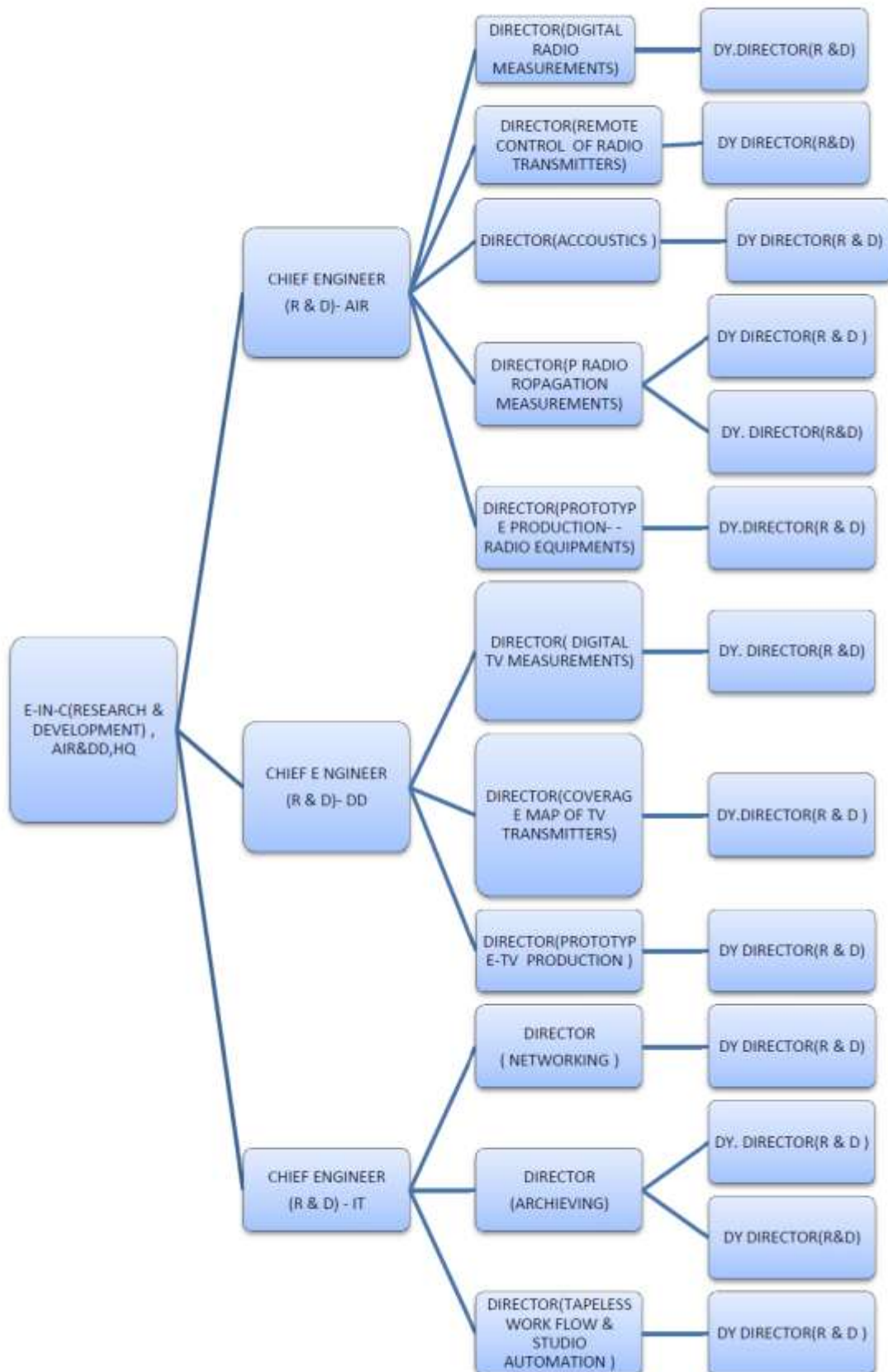
PROPOSED RESTUCTURING OF OPERATION & MAINTENANCE FUNCTIONS OF AIR & DOORDARSHAN, NORTH EAST ZONE GUWAHATI



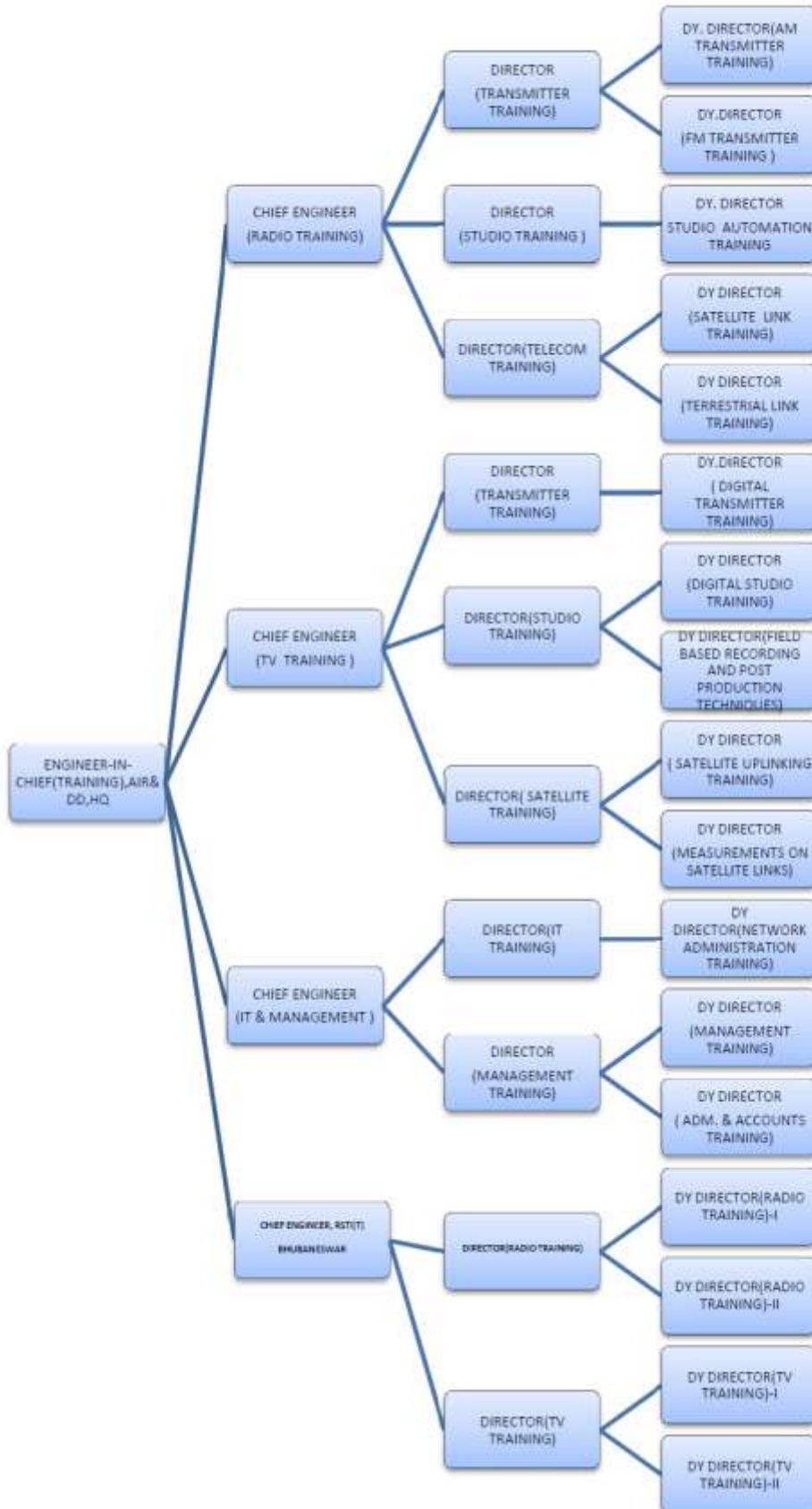
PROPOSED RESTUCTURING OF RESOURCE MANAGEMENT OF AIR & DOORDARSHAN,
AT CENTRAL LEVEL



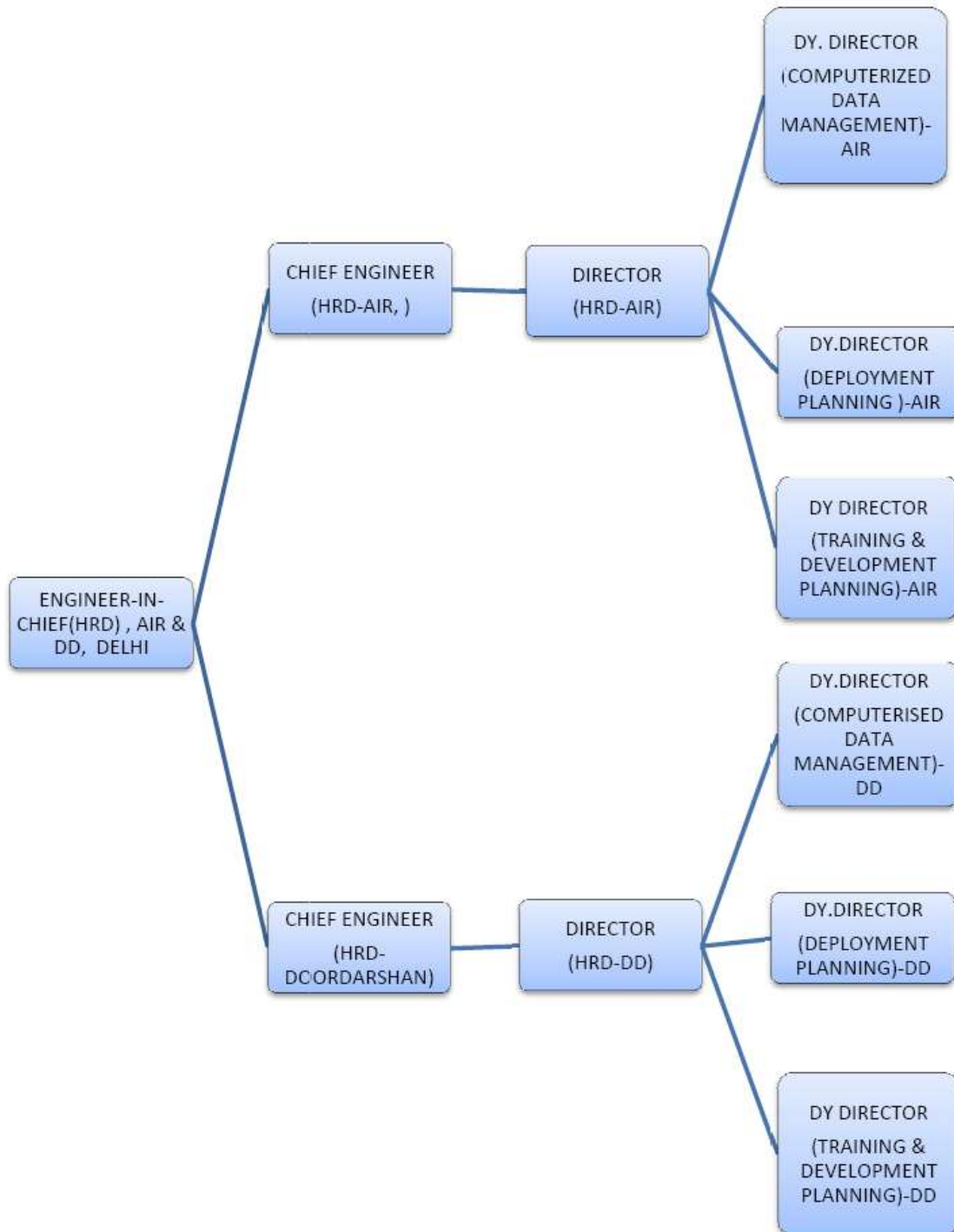
PROPOSED RESTRUCTURING OF R&D FUNCTIONS OF AIR & DOORDARSHAN AT CENTRAL LEVEL



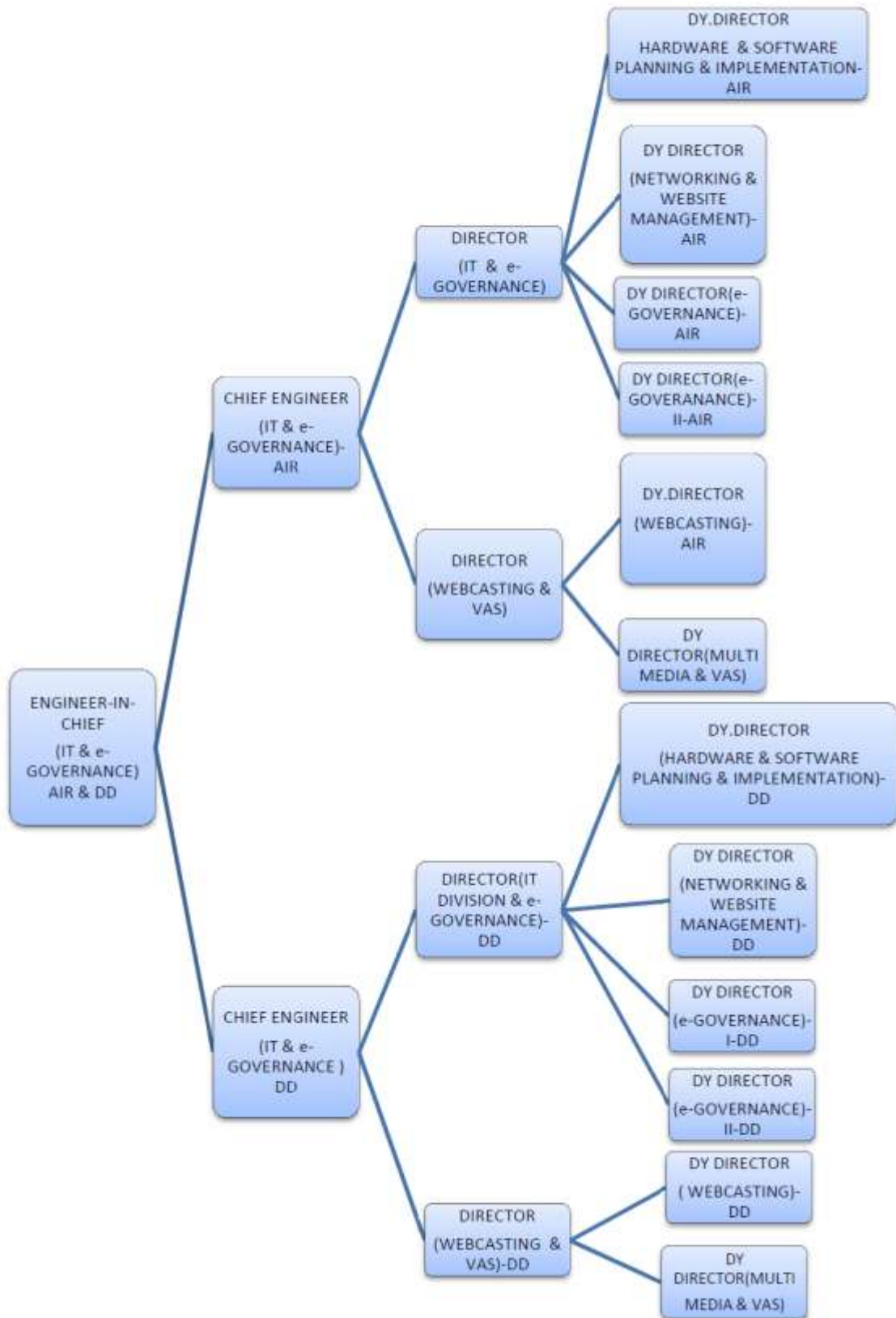
PROPOSED RESTRUCTURING OF TRAINING OF AIR & DOORDARSHAN ENGINEERS AT CENTRAL LEVEL



PROPOSED RESTRUCTURING OF HRD FUNCTIONS OF AIR & DOORDARSHAN AT CENTRAL LEVEL



PROPOSED RESTRUCTURING OF IT , MULTIMEDIA & VALUE ADDED SERVICES OF AIR & DOORDARSHAN AT CENTRAL LEVEL



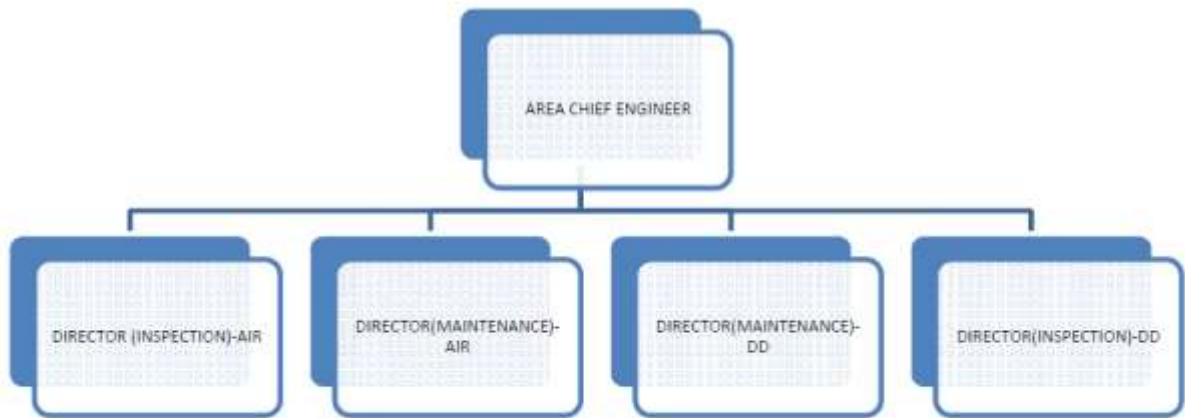
Area chief engineers

Chief Engineers are proposed to be deployed at the area headquarters to strengthen primarily the maintenance of a cluster of AIR and Doordarshan stations under their jurisdiction. The Chief Engineers shall establish their offices at locations where AIR or Doordarshan installations already exist. There shall not be any impediment for procuring land or searching for a building for setting up the Chief Engineers' offices. The Area Chief Engineers shall be assisted by Directors and shall evolve a strategy to constantly monitor and inspect the AIR/DD installations and take timely action for meeting the maintenance needs of the stations. With the present set-up of five Zonal offices, there is a team of only 7 Chief Engineers, 10 Directors and 20 Deputy Directors, to take up the inspection of 1399 Doordarshan transmitters, 66 Doordarshan Programme Production Centres, 232 broadcasting centres of AIR with 149 medium frequency(MW), 54 high frequency (SW) and 171 FM transmitters. It is humanly impossible to monitor or inspect the technical installations with this inadequate set-up of senior officers of the maintenance wings of the five Zonal Offices. The situation can be retrieved only if the concept of Area Chief Engineers is introduced. The maintenance problems of a cluster of AIR/DD stations shall not have to be referred to five Zonal Offices situated at Delhi, Chennai, Mumbai, Kolkata and Guwahati, but they shall find solutions nearer if the Area Chief Engineers are assigned taking care of the maintenance needs of the stations. All Govt organizations, MNCs and PSUs have already adopted and implemented the concept of Area Offices in order to shorten the reaction time of their management cadres. The location of the Area Chief Engineers' Offices are proposed as under:

Location of Area Chief Engineers				
North Zone	South Zone	Esat Zone	West Zone	North East Zone
Jallandhar	Tiruchirappali	Patna	Panaji	Shillong
Lucknow	Trichur	Ranchi	Bhopal	Imphal
Srinagar	Kozhikode	Sambalpur	Raipur	Dibrugarh
Jammu	PortBlair	Chinsurah	Pune	Itanagar
Varanasi	Vijaywada	Siliguri	Jagdalpur	Kohima
Allahabad	Vishakhapatnam	Bhubaneswar	Ahmedabad	Tezpur
Jodhpur	Hydearbad	BH Kolkata	Rajkot	Agartala
HPT	Bangalore	Jamshedpur	Nagpur	Silchar
HPT	Thiruwanthapuram		Indore	
Aligarh	BH Chennai		Jabalpur	
NBH Delhi	HPT Avadi		BH Mumbai	
Gorakhpur	Pondicherry		Aurangabad	
Dehradun				
Shimla				
Jaipur				

For AIR and Doordarsahn to become more effective and efficient organisations, the Area Chief Engineers need to play a greater role in the work of the organization. The Area Chief Engineers Zones are to be fully empowered and made responsible for all operational and maintenance aspects of braodacsting i.e. running of transmitters, studios, satellite uplinks, terrestrial links, O.B. covearges, etc. They should be made responsible for preparaing annual maintenance budgets, planning of maintenance activities, procuring maintenance spares, supervising and monitoring maintenance works, including quality control and financial management.

PROPOSED STRUCTURE OF AREA CHIEF ENGINEER FOR MONITORING, INSPECTION & MAINTENANCE OF A SMALL CLUSTER OF AIR/DOORDARSHAN STATIONS



PART B

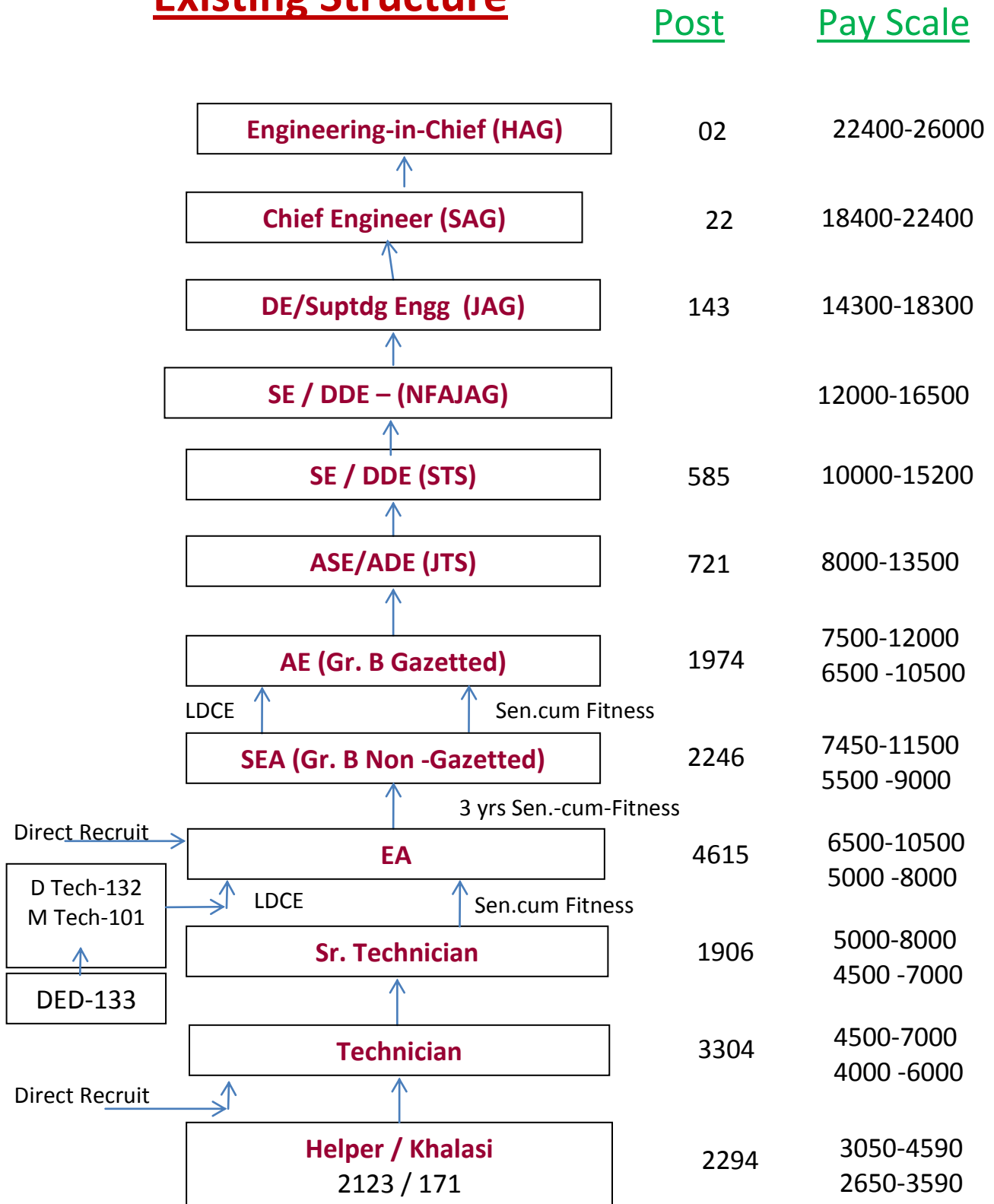
PROPOSAL FOR RESTRUCTURING OF GROUP “B” , “C” & “D” ENGINEERING STAFF OF AND DOORDARSHAN

The engineering cadres of AIR & Doordarshan comprise of Khalasi / Helper (Group D) to Engineer –in – Chief (HAG). The cadres are:

Khalasi	- Group D
Helper	- Group D
Technician	- Group C
Senior Technician	- Group C
Engineering Assistant	- Group C
Senior Engineering Assistant	- Group B non gazetted
Assistant Engineer	- Group B gazetted
Assistant Station Engineer/ Assistant Director Engineering	- Group A (Junior Time Scale)
Station Engineer/ Deputy Director Engineering	- Senior Time Scale
Station Engineer/ Deputy Director Engineering- sel. Grade	- Non Functional JAG
Superintending Engineer/ Director Engineering	- Junior Administrative Grade
Chief Engineer	- Senior Administrative Grade
Engineer – in – Chief	- Higher Administrative Grade

1. The present set-up with sanctioned posts, mode of recruitment, promotional system etc. are:

Existing Structure



2. DUTIES AND RESPONSIBILITIES OF ENGINEERING STAFF:

2.1. ALL INDIA RADIO

2.1.1. Assistant Engineer

AIR Manual defines the duties and responsibilities of Assistant Engineer as detailed below:

- i. Shift –in-charge at transmitters and major studio centers
- i. In-charge of recording, dubbing and OB activities at Regional and feeder centers and centers and transcription service
- i. Work as Server Administrator
- i. Supervision of server based recordings in Digital domain
- i. Supervision of the operation and maintenance of all the servers and workstations including software and hardware used for digital broadcasting in News Services Division of All India Radio.
- i. In-charge of aerials and feeder line maintenance at SW centers having at least 2 short wave transmitters
- i. Maintenance, installation, Engineering Administration and other technical responsibilities at stations/office of All India Radio as may be assigned to him/her
- i. Responsible for the maintenance and servicing of defective equipments in various areas.
- i. Responsible for the proper installation of new equipments systems/technical facilities at the Station/ Transmitter.
- i. Responsible for the procurement of engineering stores and management/Control of inventory at the Station/Transmitter.

2.1.2. Senior Engineering Assistant

The following duties and responsibilities have been specified for the SEA's cadre in the AIR Manual.

- i. Shift-in-charge at Control Rooms, handling up to three simultaneous transmission channels
- ii. Recording, dubbing and OB activities; operation & maintenance of equipments
- iii. Work as Server Administrator
- iv. Technical support to the server based recordings and editing in Digital domain
- v. Operation and maintenance of all the servers and workstations including software and hard ware using for digital broadcasting in audio programmes.
- vi. Operation and maintenance of all the servers and workstations including software and hard ware using for digital broadcasting in News Services Division of All India Radio.
- vii. Technical support for the preparation of News, including news bites and broadcasting of news in Digital format through hard disc based system.
- viii. Operation and maintenance of Master Switching Room (MSR) routing different studios to different transmission lines including Satellite Linking through server based system within the studio complex.
- ix. Operation and maintenance of Microwave Link and Studio Transmitter Link linking various programme signals between studio complex and Transmitter complex.
- x. Operation and maintenance of Captive Earth station for up linking and receiving different programme through analog as well as digital system.
- xi. Maintaining of All India Radio website and maintenance of servers related to the website.
- xii. Live interactive Internet system on the occasions of Natural calamities and National Calamities.
- xiii. Recording, Editing, Encoding and Uploading of audio programmes, text news and other programmes like notifications, tender notices etc using different types of software.
- xiv. Transmission Duties at Master Switching Room
- xv. Shift-in-charge at each medium power transmitter or a group of low power transmitters at a single location and shift duties at High Power Transmitters
- xvi.** Assisting Senior Staff in maintenance, installation Engineering administration and other technical activities as may be assigned to him/her

2.1.3. Engineering Assistant

The following duties and responsibilities of EA's cadre have been specified for the cadres in the AIR Manual.

- i. Transmission duties at Studios, Transmitting Centres and Captive earth station
- ii. Recording, Dubbing and OB activities
- iii. Server based recordings and editing in Digital domain.
- iv. Operation and maintenance of all the servers and workstations including software and hard ware used for digital broadcasting in audio programmes.
- v. Maintenance of All India Radio website and maintenance of servers related to the website.
- vi. Operation of live interactive Internet system in national calamities.
- vii. Recording, Editing, Encoding and Uploading of audio programmes, text, news and other programmes like notifications, tender notices etc using different types of software in Internet.
- viii. Outside Broadcast operations
- ix. S.W. Aerial operations at High Power Transmitters
- x. Maintenance of A/c plants, DG sets, Antenna Tuning Unit, electrical installations including switch gear room and other broadcasting equipments at studio and transmitter.
- xi. Assisting Senior Staff in maintenance and installation work and other technical activities as may be assigned to him/her
(AIR Manual 5-2-24)

2.1.4. Senior Technicians

- i. Placing microphones in the studio and connecting them to the audio-console via microphone cables; Operating the mike fitted in the studio; helping engineer in the testing of microphones, headphones, inter-communication systems, tape recorders, turn table etc., Checking and maintaining all the tools provided in production control room and, keeping their record.
- ii. Checking emergency light system.

- iii. Assisting engineers in the maintenance of audio equipments.
- iv. Assisting Engineers-on-duty in operation and maintenance of transmitter equipments in Transmitter complex.
- v. Operation and Maintenance of A/c plants, DG sets, Antenna Tuning Unit, electrical installations including switch gear room and other broadcasting equipments at studio and transmitter.
- vi. Attending minor faults during the shift in studio as well as transmitter complex.
- vii. To assist the senior engineering staff in repair and maintenance of server based equipments and computers in studio and transmitter complex.
- viii. EA is expected to handle particularly complex, jobs at the discretion of his superior officers.

2.1.5. Technicians

The duties and responsibilities specified for the cadres are as below:

- i To assist the operational staff at Transmitters, Studio, Captive earth Station and outside Broadcast etc. for maintaining the continuity of service.
- ii To assist in aerial selection, stub changing, reversals of beams etc. in the aerial field and manning and operating feeder-switching structures etc.
- iii To operate and run stand by/power supply units
- iv To assist the engineering staff in repair and maintenance of equipments
- v To assist in special maintenance and test of aerials, feeder lines, air conditioning plants, tape recorders, stand-by equipments, stand-by power supply arrangements and other ancillary plants and equipment.
- vi To check-up and maintain the fire fighting appliances tools and batteries, clock circuits, torches and lamps etc. at regular intervals
- vii To check monitoring circuits, intercom circuits and emergency lighting arrangements and report any fault
- viii To check tools and keep them in good working order after necessary repair
- ix To assist in carrying out minor installation works at stations

- x To assist in carrying out installation and testing of transformers, studio, receiving centers, aerials, feeder sub-station equipments, air conditioning plants. Diesel/Petrol generating sets and other associated works including cabling and wiring
- xi To assist in periodical changing or oil in oil filled components and in testing the oil
- xii To assist in checking of engineering stores
- xiii To perform such work as may be assigned by superior officers in the interest of service.

2.1.6. Mast Technician in High Power Transmitter

As per AIR manual the duties and responsibilities are:

- i. To work on installations up to a high of 150 feet.
- ii. To check, repair and paint masts or other structures upto a height of
i. 1000 feet.
- iii. To assist Engineering Staff in aerial matching and associated measurements.
- iv.** Installation and maintenance of guys, aerials, feeders, feeder poles, obstruction lights, cables etc.
- v.** To check up correctness and quality of mast work done by contractors.
- vi.** To replace or repair mast lights
- vii.** Any other item or work relating to masts and feeders

2.1.7. Diesel Technician

Disel Technicians perform the preventive maintenance of diesel engines, applying their expertise and knowledge.

2.1.8. Diesel Engine Driver

The Diesel Engine Drivers' duties and responsibilities, as per AIR manual, are:

- i* Operation of diesel power plants
- ii* Carrying out schedule of preventive maintenance of diesel plants and associated accessories (AIR Manual)

2.1.9. Helper

The various works a Helper actually performs includes:

- i.* Helping in the arrangement of tools of work bench
- ii.* Providing all sort of technical help to technician in the various works at Studios Transmitters etc.
- iii.* Providing help in the transportation/movement of equipment
- iv.* Providing help in maintenance, cleaning of panels testing etc. in AIR & TV Centers.

2.2. DOORDARSHAN

2.2.1. Assistant Engineer

Assistant Engineer is primarily responsible for the smooth and efficient operation and maintenance of various equipment – systems/technical facilities; organization of recording/transmission shifts duty work with the help of junior staff members; management of engineering purchase/stores; and installation work at DDK/PGF/ TVRC/TVMC in

Doordarshan. This is in addition to any other work assigned by the superior engineering officers from time to time.

AT Doordarshan Kendra (DDK) / Programme Generation Facility (PGF) / Programme Production Centre (PPC)

Assistant Engineer is in-charge of operations in various technical areas and his functions are as under:

- a.** Technical Director : Responsible for studio technical operations during production/transmission of programmes from the center and during OBs.
- b.** Transmitter Engineer : Ensures proper functioning of transmitter(s) and associated equipments.
- c.** Master Switching Room Engineer : Responsible for proper routing of incoming and outgoing signals from and to various sources i.e. studios, VTR's, out stations in the network and foreign organization, as may be necessary.
- d.** Microwave Engineer : Responsible for setting up of Microwave links at the studio and OB ends for receiving/sending TV Signals and Co-ordination with concerned agencies.
- e.** Maintenance Engineer : Responsible for the maintenance and servicing of defective equipments in various areas.
- f.** Installation Engineer : Responsible for the proper installation of new equipments systems/technical facilities at the Kendra.
- g.** Stores/Purchase Engineer : Responsible for the procurement of engineering stores and management/Control of inventory at the Kendra.

The above responsibilities are described in details as below:

- a.** Technical Director

- ii.* To be the link between the Producer of the programmes and the entire technical crew.
- iii.* Offer suggestions to the Producer of the programme on all engineering matters regarding recording/transmission of the programme from the studio.
- iv.* Attend Programme/transmission planning meetings and offer technical suggestions suitably.
- v.* Scrutinize and implement with the help of technical-operations crew 2nd lighting plot, audio arrangements and other special technical requirements in the studios and at OB spots.
- vi.* Coordinate exchange of signals and their timing between the production control room and other technical areas like VTR, MSR, Transmitter, OB spot etc.
- vii.* Check programme material like videotapes, audiotapes and films well in time for recordings/playbacks.
- viii.* Ensure proper operation of all the equipments in the studio chain viz, cameras, vision-mixer, audio-mixing desk, VTRs, inter-communication, signal distribution etc., and advise the Producers about any change of plans necessary due to technical considerations.
- ix.* Man end-control position and adjust the video signals for proper levels of the various parameters.
- x. Ensure proper coordination amongst all members of the technical, operations crew and arrange substitution of duties wherever necessary.
- xi. Maintain log of studio activities during transmission and recording for submissions to senior engineering officers.

b. Transmitter Engineer

- i. To be overall responsible for proper functioning of the transmitters and all other associated equipments.
- ii. Coordinate with studio and/or MSR for lining up of programme input equipment chains before each transmission.
- iii. Test the transmitters including stand-by arrangements like spare transmitter, diesel generators, air-conditioning units and spare exciter rack etc., prior to transmission.

- iv. To man the Control desk to continuously monitor the technical quality of the picture both at input and at output of the transmitter, and take necessary corrective measures in case of power failure/equipment failure.
- v. Ensure safety precautions in respect of high voltages, earthing, aviation obstruction lights and first aid kit etc.
- vi. Carry out periodic maintenance as per approved schedule including special work like value changes, test major spares, take performance measurements, and keep records of the same.
- vii. Carry out survey of the reception of signals in the service area including the field strength measurements at periodical intervals, as required.

c. MSR Engineer

- ii. Overall In charge of all activities in MSR for network switching.
- iii. Ensure proper functioning of all switching, monitoring, inter-communication, and associated equipments including TVRO and DRS.
- iii. Check the daily schedule of programme exchange and finalize routing plan. Incorporate changes in the schedule taking into account technical considerations.
- iv. Coordinate with TD/MW engineer, transmitter engineer/OB engineer and checking technical quality of incoming programmes and ensure good reception of signals.
- vi. Periodically test BSNL/MTNL Microwave link circuits jointly with BSNL/MTNL staff.
- vii. Coordinate with satellite stations/OCS to confirm timings and availability of booked circuits; ensure technical quality in respect of standards and levels, routing of audio and video signals from foreign organization etc. Arrange audio conferencing between various centers in the network and with foreign organizations.

2.2.2. Senior Engineering Assistant and Engineering Assistant

Senior Engineering Assistants perform the supervisory duties and function as in-charge in the absence of AE. Engineering Assistants primarily perform operational duties in various areas in the studio, captive Earth Station and Transmitters.

Both perform duties like vision mixing, camera control, lighting, audio, VTR transmitter, microwave links, field recording on VCR, Sync sound studio, receiver section, MSR, etc., and assist engineering officers in the maintenance and installation of equipments/technical facilities and in Stores work at Doordarshan Kendras/ TV Relay Centers. This is in addition to any other work assigned to them from time to time by senior engineering officers.

Their detailed duties are as under:

A. Vision Mixing:

- i. Attending planning meeting for programme recording/transmissions and suggest changes in camera script/cue-sheet necessitated due to technical considerations.
- ii. Studying the camera-script together with the programme production staff and plan technical interpretations of the aesthetic requirements of the programme, as determined by the Producer of the programme.
- iii. Studying the transmission cue sheet and planning the technical operations in coordination with audio-engineer, lighting-engineer, VTR & server engineer.
- iv. Checking vision – mixer input signals from all areas.
- v. Checking and aligning all monitors in the production control room of the studio for optimum matching.
- vi. Checking the operational performance of all the necessary functions of the vision mixer and remote controls for proper functioning.
- vii. Checking and adjusting the clock system.
- viii. Reporting on all minor/major faults to the Technical Director and assisting him in their rectifications.

B. Camera Control:

- i. Checking electrical and mechanical working of all the Cameras well in advance for proper operation of the dollies, pan and tilt head, view-finder, zoom and focus controls of the lens, the balance of the camera, and to make adjustments wherever necessary.

- ii. Checking all the controls of the Camera, main control panel and remote control panel for their normal operation including pedestal, etc.
- iii. Lining up all the cameras as per the prescribed procedure including white-balance, black-balance, registration etc., and effecting corrections wherever necessary.
- iv. Cross checking with the vision mixer the camera inputs to the switcher for proper levels.
- v. Checking and ensuring the efficient operation of camera producer-CCU/TD inter-communication system.
- vi. Checking the Camera picture quality, during blocking and rehearsal and suggesting changes to lighting engineer/producer in lighting plot to enhance the overall technical quality of the programme.
- vii. Following the Camera script for production during the rehearsals and Planning camera controlling sequence accordingly for subsequent implementation during recording/transmission.

C. Lighting:

- i. Attending planning meeting for recording/transmission and suggesting changes in camera angles/light Plan/cue sheet due to technical consideration for the overall improvement of programme quality.
- ii. Preparing lighting-plot in consultation with Technical Director/Producer, ensuring optimum technical quality & meeting the aesthetic requirements of programmes.
- iii. Briefing the supporting staff for proper implementation of the lighting plan in respect of physical locations and in consultation with audio-engineer to eliminate boom/microphone shadows.
- iv. Implementing physically the lighting plan ensuring prescribed precautions and effecting changes wherever necessary.
- v. Operating Lighting Control Panel during recording/transmission.
- vi. Continuously monitoring the technical quality of the picture from the Camera from the point of view of lighting and effecting corrections on the spot in close liaison with CCU Engineer.
- vii. Ensuring satisfactory operation of light fittings and power distribution system taking into account all electrical and mechanical safety precautions.

- viii. Attending to routine servicing and maintenance of lighting system.
- ix. Maintaining all records in respect of life of bulbs, fittings etc.

D. Audio:

- i. Attending planning meeting for productions and finalize audio arrangements to meet the requirements of the production, planning and implementing the microphone placement plan for recordings/transmissions.
- ii. Planning and implementing audio effects for programme production in consultation with the programmer and TD.
- iii. Checking the audio console thoroughly for all its functions, including pre-listening, fold back and echo etc., checking all inputs signals for levels and quality and effecting necessary individual channel equalizations.
- iv. Checking the audiotapes for the duration and cue marks along with the programme Production staff.
- v. Attending planning meeting for transmission and suggesting changes wherever required on account of operational constraints.
- vi. Ensuring all the tapes, necessary for the transmission, are available in proper order of sequence, checking all the cuts, their durations and cue marks along with programme Production staff.
- vii. Ensuring that the audio signals to all the areas (VTR. TK. XTR. MSR. MW etc.) are available and checking their quality and levels before each recording and transmission.
- viii. Checking and adjusting the levels of inter-Communication links between the producer, studio and all other technical areas.
- ix. Checking and ensuring the satisfactory working of the studio loud-speaker and fold-back reservation systems.
- x. Manning the audio-console, tape-recorders, turntable during the recording and transmission and maintaining the individual and relative levels as per the requirements of the production or transmissions.

E Non Linear Editing:

Operation and maintenance of equipments used for Non-Linear editing.

F Digital satellite News Gathering (DSNG):

- i. Responsible for the uplinking of different OB signals from OB spot to the Studio centre in digital format.
- ii. Operation and maintenance of equipments using in DSNG

G Captive Earth Station:

Responsible for the up linking and down linking of the signals from various channels of Doordarshan, operation and maintenance of equipments used for the up linking , down linking and monitoring of audio & video signals in the Earth station.

H Master Switching Room:

- i. Testing of switching, monitoring, intercommunication and associated equipment in MSR including TVRO and DRS.
- ii. Attending along with MSR engineer the daily meeting to discuss the schedule of programme exchange and prepare a routine plan.
- iii. Checking technical quality of incoming and outgoing signals and setting the variable controls for a particular set up.
- iv. Checking and aligning monitors and audio monitoring system and adjusting levels.
- v. Manning of switching console and timely change over and continuous monitoring of incoming and outgoing signals.
- vi. Attending to faults and assisting MSR engineer in maintenance of equipment.
- vii. Checking to ensure proper operation of intercom links with other areas.

I. Electronic News Gathering (ENG):

- i. Testing and aligning the ENG gear along with the cameraman for satisfactory audio/ video operation of the unit.
- ii. Offering suggestions or assistance to the cameraman in respect of operation of camera viz-filter settings, video Level, white-balance, registration etc.

- iii. Operating the recorder during the recording at location and checking the recording for optimum quality.
- iv. Maintaining records of the performance of equipment at locations and report any manufacturing to senior officers at the base.
- v. Keep essential tools and attending to the minor faults at location.
- vi. Assisting the senior engineering officers in the maintenance of ENG equipment.

J VTR / Server:

- i. Operating the VTR during the recording/playback/editing etc.
- ii. Previewing tapes for recording/transmission, playback along with programme production staff, checking and confirming the audio track to be used and briefing the audio engineer accordingly.
- iii. Operating the Servers – the hard disc based Recording /Play back system
- iv. Maintaining records of recording/Playback of tapes.
- v. Maintenance of VTRs/ servers
- vi. Ensuring proper functioning of intercom links with other areas.

K Sync Sound Studio:

- i. Testing the sync sound transfer machine(s) tape recorders, audio-video monitors, turn tables, echo units, audio console and other associated equipment for satisfactory/operation.
- ii. Transferring the sound from 16 mm tape to 1/4" audio tape or from 1/2" to 1/4" audio tape for capsuling for a particular programme.
- iii. Attending to minor faults at the time of operation reporting Major faults to the T.D. or AE incharge of the film Section.
- iv. Checking the projection system in the Studio and the associated remote control.
- v. Checking placement of microphone, testing and adjusting level and balancing for audio recordings and operation of audio console.
- vi. Checking functioning of film equipment in other areas like editing, processing and preview.

L Microwave Link

- i. Assisting members of staff during the bench test, installation at the transmitting/receiving and lining up of the equipment.
- ii. Ensuring proper packaging and testing of the equipment before movement to and from OB spot and unpacking at the other end.
- iii. Manning the control units during transmission/reception.
- iv. Establishing the voice communication link between the transmitter/receiver.
- v. Assisting in routine measurement on MW chain for optimum performance.
- vi. Ensuring proper operation of intercom links with other areas.

M Transmitter:

- i. Assisting the senior engineering officer, if available on duty, for the proper working of transmitting and associated equipments.
- ii. Periodical logging of meter readings.
- iii. Carrying out routine maintenance of transmitter and power supply equipments.
- iv. Constant monitoring of audio/video signals received from control-room/TVRO/DRS and demodulated signal of transmitter.
- v. Checking and maintaining the impress stores of the transmitter.
- vi. Checking the normal functioning of D.R.S./TVRO relay receivers where provided at the transmitter site for relay of programmes.
- vii. Ensuring proper functioning of intercommunication links with other areas.

N Maintenance/Installation

Assisting the AE/ASE incharge of maintenance/installation teams in the servicing of defective equipments in various areas and installation/commissioning of new equipment systems/technical facilities at the Kendra respectively.

O Purchase/Stores

Assisting the officer-in-charge of the engineering stores in the checking/testing of equipments/spares, maintenance of records and preparations of various returns.

2.2.2. Senior Technician/Technician

Senior Technician performs the operational duties and performs EA's duties in their absence.

Senior technicians/technicians primarily assist engineers in the maintenance of equipment in various technical areas and in the operational activities of audio/lighting/ air conditioning / transmitter and other areas. This is in addition to any other work assigned to them from time to time by superior engineering officers. The details of their duties are as under.

A Audio Side

- i. Placing microphones in the studio and connecting them to the audio-console via microphone cables; Operating boom-mike fitted in the studio; helping audio-engineer in the testing of microphones, headphones, inter-communication systems, tape recorders, turn table etc., removing mikes, audio cables and other associated portable and loose audio equipment used for programme and keeping them in proper place after recording/transmission.
- ii. Checking and maintaining all the tools provided in production control room and, keeping their record.
- iii. Checking emergency light system.
- iv. Remaining present in Studio during recording/transmission for shifting the mikes and connectors and keeping in constant touch with audio-engineer via headset.
- v. Ensuring general cleanliness of equipment, decks, Consoles, glass-partitions, doors etc. in the technical- areas.
- vi. Assisting engineers in the maintenance of audio/PCR equipments.
- vii. Checking and replenishing first-aid box material.

B Lighting Side

- i. Testing of lighting system including moving light battens and essential studio lighting circuits wherever provided.
- ii. Positioning and adjusting light fixtures in the studio/OB location as per instructions from the engineers.

- iii. Operating lighting switchgear system.
- iv. Keeping a watch on the lighting system for any abnormality like blow outs, overheating of connectors, cables, fixtures and other before during and after the programme.
- v. Attending to faults like replacement of fuses, cables, connectors, bulbs, lenses etc. during recording transmission shifts.
- vi. Ensuring general upkeep of lighting fixtures and moving light batten-system for proper electrical and mechanical operation and taking all electrical and mechanical safety precautions.
- vii. Testing of intercom links between lighting control and switchgear rooms.
- viii. Checking tools, clock, first-aid kit, wherever provided, in lighting control room.

C. Transmitter Side

- i. Assisting engineers on duty in operation and maintenance of transmitter equipment.
- ii. Testing/checking clocks/emergency lights/first-aid kit provided in transmitter, checking power supply switchgears and electrical sub-station equipments for normal functioning under the guidance of engineer on duty.
- iii. Testing and operating the standby diesel generator(s).
- iv. Assisting the engineer in the installation/alignment of MW/TVRO/LDRS links.
- v. Attending to minor faults during the shift.
- vi. Operating air-conditioning plants and window type air-conditioners.

D. Air-Conditioning Side

- i. Operating A/C plants and window type air-conditioners.
- ii. Periodic logging meter readings in A/C room and temperature/humidity readings in different air-conditioned areas.
- iii. Keeping constant watch on A/C equipment in shift for normal functioning.

- iv. Routine checking of power supply switchgear provided in A/C Plant rooms.
- v. Carrying out maintenance of A/C Plants and window Type air-conditioners under the guidance of Engineers.
- vi. Attending to minor faults during the shift.

E. Digital Satellite News Gathering (DSNG):

Assisting the engineers for the uplinking of different OB signals from OB spot to the Studio centre in digital format. Assisting the senior officers in the operation and maintenance of equipments used in DSNG

F. Captive Earth Station:

Assisting the engineers for the up linking and down linking of the signals from various channels of Doordarshan. Assisting the engineers in the operation and maintenance of equipments used for the up linking , down linking and monitoring of audio & video signals in the Earth station.

G. Maintenance/Installation

Assisting the AE/ASE in charge of maintenance/installation teams in the servicing of defective equipments in various areas and installation/commissioning of new equipment systems/technical facilities at the Kendra respectively.

H. General Maintenance

1. Assisting maintenance engineer in the maintenance of equipments in various technical areas.
 - i. Checking master/Slave Clocks in Coordination with various section.
 - ii. Checking emergency lights and charging batteries provided in each section.
 - iii. Checking house lights in various technical areas.
 - iv. Checking tools, portable test and measuring equipments and maintaining a record of their movements.
 - v. Checking technical pamphlets available in maintenance Section.

- vi. Supervising general cleaning of the floors in technical areas in association with the Helper/Khalasi.

2.2.3. Mast Technician

Mast Technician is primarily required to work on transmitting masts/towers at the transmitting centers: His duties include the following in addition to any other work assigned by the superior engineering Officers from time to time.

- i. Attending to antenna-feeders, distribution transformers and other fixtures in the antenna system mounted on tower.
- ii. Replacing fused mast lights.
- iii. Repairing electrical fittings, cables on the mast.
- iv. Carrying out routine maintenance of electrical mechanical fixtures of the mast including mast lifts.
- v. Installing equipments and fixtures on the tower.
- vi. Carrying out maintenance and replacement of all necessary gear required for working on masts/towers.
- vii. Installation and testing of Parabolic dish antenna and equipments of the microwave links on tall structures/buildings for establishing Programme link between the OB spot and the center. Testing and operation of diesel generator(s) where not co-located with transmitter.
- viii. Checking/filling the water in water reservoir for fire hydrant and periodic checking of fire fighting facilities in the premises.

2.2.4. Helper/Khalasi.

Helper/Khalasi primarily perform following duties, in additions to any other work assigned to them by their superiors from time to time.

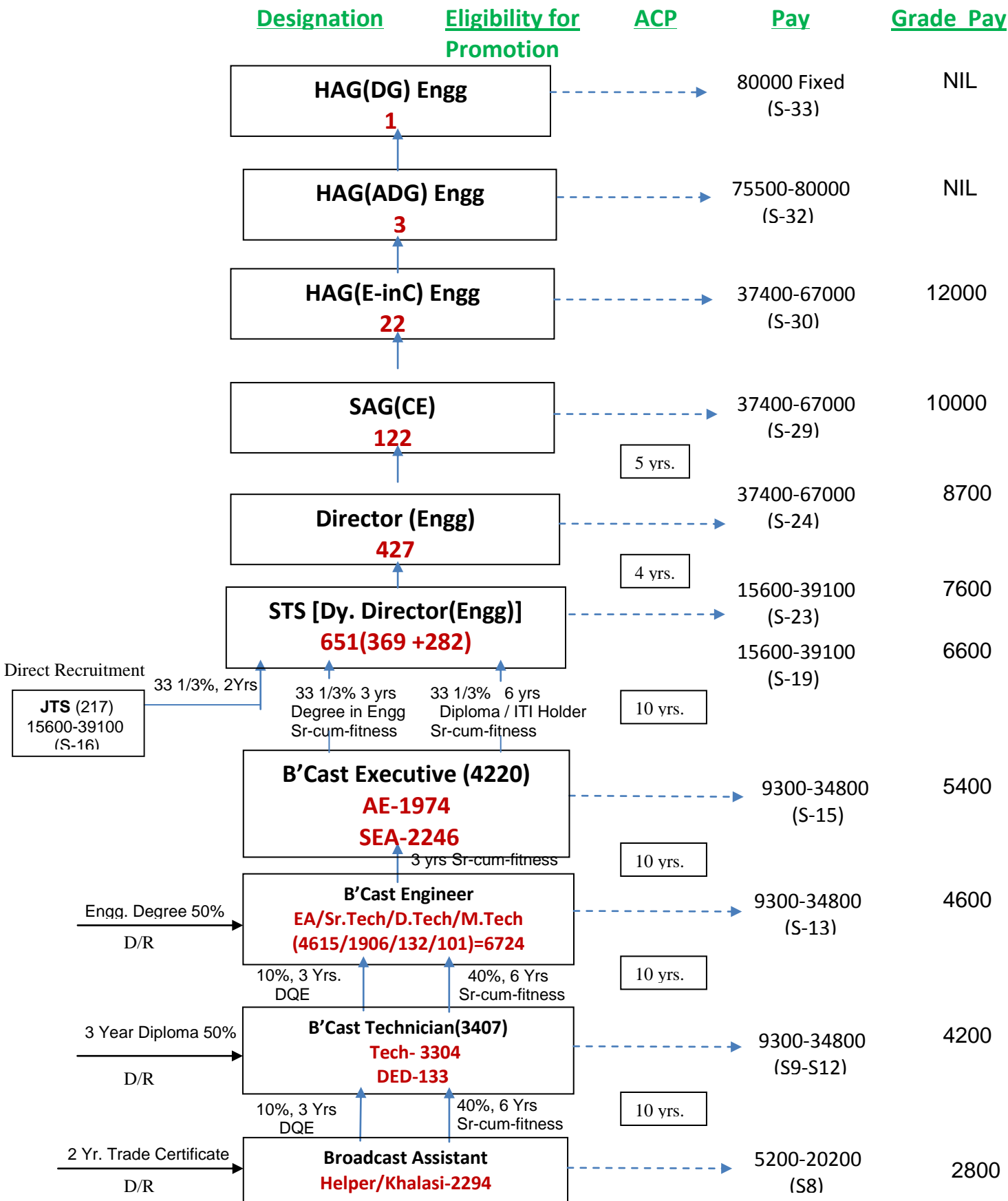
- i. Helping SEA/EA/Sr. Technician/Technician in the maintenance of equipments.
- ii. Maintaining cleanliness of equipments and technical furniture in technical areas.
- iii. Shifting of equipment/furniture.
- iv. Helping technical operational staff in lighting, audio, air-conditioning equipment maintenance and installation work.

- v. Locking/opening of technical area in presence of the shift-incharge.
- vi. Working as Camera dolleyman/cableman in studio/OB spots.
- vii. Laying Cables and providing other manual help in installation of MW links during OB/ENG Coverage's.

Re-organization and restructuring of the Engineering Wings of AIR & Doordarshan

The re-organization and restructuring of the engineering cadres of AIR and Doordarshan, from Helper to E-in-C, has been jointly proposed by the Association of Radio & TV Engineering Employees, All India Radio & Doordarshan Technical Employees Association, All India Radio & Doordarshan Engineers Association and All India Akashvani Group "D" Employees Association. Although the ADTEA wants an upward revision in the number of posts proposed at JTS and STS levels, all the above four Associations have jointly agreed to the proposed re-structuring, shown on the next page, with full mandate of the majority of their members and their governing councils.

Proposed Cadre Structure



Details with Justifications

Khalasi / Helper (To be re-designated as Broadcast Assistant)

Starting from bottom, there are only few posts of Khalasi left in the department, these should be merged with Helper. The 5th CPC and there after the Govt of India has already ordered for the merger of the pay scales of Khalasi and Helper. Accordingly both these cadres are already placed in the same scale. This post may be re-designated as Broadcast Assistant. The entry qualification for the future intakes may be 2 year ITI certificate.

(Existing employees should be considered at par with the future recruits for promotional purposes.)

Details with Justifications

- Present designation: Helper/ Khalasi
- Proposed designation: Broadcast Assistant
- Present required qualification: Good Physique with working knowledge of Electrical & mechanical machines.
- Proposed qualification for reemployment: 2 yr ITI Trade Certificate in Electronics / Electrical Engineering / Information technology for future recruitment
- Present pay scale: Rs. 2650 – 4000 (75%) & 3050 – 4590 (25%)
- **Proposed pay scale** **Rs.5200 – 20200 with Rs 2800 (Grade pay)**

& Grade Pay

- **Broadcast Assistant: System of entry into the cadre:**

- (a) Present: 50% Direct Recruitment / 50% from the cadre of Khalasi

- (b) Proposed: 100% Direct Recruitment

- (Note: Ministry of Finance/ DOP&T had already merged the pay scales of Khalasi & Helper)

- **System of Promotion:**

- Present: Through LDCE against 20% vacancies of Technician with an eligibility period of 11 yrs.

- Proposed: Through seniority cum fitness after the eligibility service of 6 years against 40% vacancies of Broadcast Technician & 10% through Qualification prescribed for next cadre or passing Departmental Qualifying Examination after completing 3 years in regular service.

- Broadcast Assistant: (Khalasi/Helper)

Justifications:

- Ministry of Finance/ DOP&T had already merged the pay scales of Khalasi & Helper. The file for merger of these cadres is pending with Ministry of I&B after the approval of DG,AIR and Prasar Bharati board.

- Fourth and fifth Central Pay Commissions established particular pay scales for the cadres with minimum qualifications. Accordingly, the 5th CPC has recommended the pay scale of Rs.4000- 6000 for the Engineering cadres carrying the minimum required qualification of 2yrs ITI certificate. The scale proposed above is the replacement scale (in the 6th CPC) of Rs.4000 – 6000 of 5th CPC.
- Enhancement in minimum qualification for the future recruitment has been proposed in light of the advancement in broadcast technology since the inception of AIR/DD manual long back.
- As per the existing rules of DOP&T, the change in RR should not be to disadvantage of existing employees. Hence the existing employees should be considered at par with the future recruits for the promotional purposes.

Diesel Engine Driver (DED)

Department has already declared Diesel Engine Driver, a dying cadre. Most of the incumbents are being deputed against the duties of Technician. This cadre may be merged with the cadre of Technician as already agreed upon by Prasar Bharati Board.

Technician (To be re-designated as Broadcast Technician)

The 50% vacancies in Technician cadre should be directly recruited and rest should be filled through departmental promotion from the post of Helper (Broadcast Assistant). This post may be re-designated as Broadcast Technician. The entry qualification for the future intakes may be Diploma in Engineering.

(Existing employees should be considered at par with the future recruits for promotional purposes.)

Details with Justifications

- Broadcast Technician (Technician + Diesel Engine Driver)
- Present designation: Technician / Diesel Engine Driver

- Proposed designation: Broadcast Technician
- Present required Qualification: Matriculate or equivalent & 2 yr trade certificate from an ITI in Radio or Electronics or Electrician with one year practical experience after obtaining the certificate or Diploma from a recognised institution for Wireman Mechanic or Electrician or Fitter Mechanic subject to the condition that the candidate possesses suitable electrical license with at least two years experience in a reputable workshop in one of the following: (1) Lathe work (2) Carpentry (3) Electric wiring soldering, (4) Internal Combustion Engine, (5) Fitting and Plumbing

Broadcast Technician (Technician + Diesel Engine Driver)

- Proposed qualification for future recruitment: 3 year Diploma in Electronics/ Electrical Engg/ Degree in Electrical/ Electronics Engineering /IT For future recruitment
- Present pay scale: Rs. 4500- 7000(Tech joined upto 25.2.1999) & 4000 – 6000 (for Tech. joined after 25.2.1999)
- **Proposed pay scale & Grade Pay:** **Rs.9300 – 34800 & Rs 4200 (Garde Pay)**
- System of entry into the cadre:
- Present: 80% through Direct Recruitment and 20% through Departmental promotion from Helper

by limited departmental competitive examination with eligibility of 11 years of service

- (b) Proposed: 50% Direct Recruitment; 50% Departmental Promotion (10% through Qualified/DQE & 40% through Seniority – cum- fitness) from the cadre of Broadcast Assistant.

System of Promotion for Broadcast Technician (Technician + Diesel Engine Driver) to the next higher cadre of Broadcast Engineer (Formed by merging Sr. Technicain, Diesel Technician, Mast Technicain and Engineering Assiostant):

- Present: **Promotion to Sr. Technicaian's cadre:**
100% through Seniority cum fitness from the cadre of Technicain
Promotion to EA's cadre:
80% through Direct Recruitment
10% Departmental Promotion through SCF from the cadre of Sr. Technician
10% through LDCE from the acdre of Sr. Technician/Mast Technician /Diesel Technician
- Proposed: 50% of the posts of Broadcast Engineer shall be filled by Direct Recruitment
50% by Departmental promotion (40% through seniority cum fitness after the eligibility of 6 years of service & possession of prescribed Qualification for the next higher cadre and 10% by passing Departmental Qualifying Examination after completing 3 years of regular service

- **Broadcast Technician (Technician + Diesel Engine Driver) : Justifications:**

- Fourth and Fifth Central Pay Commissions established the relation between pay scales and the professional cadres with minimum qualifications. Accordingly the 5th CPC had recommended the pay scale of Rs.5000- 8000 for the engineering cadres carrying the minimum required qualification of 3 year Diploma. The scale proposed above is the replacement scale (in 6th CPC) of Rs.5000 – 8000 of 5th CPC.

- Enhancement in minimum qualification for the future recruitment has been proposed in light of the advancement in broadcast technology since the inception of AIR/DD manual long back.

- As per the existing rules of DOP&T, the change in RR should not be to disadvantage of existing employees. Hence the existing employees should be considered at par with the future recruits for the promotional purposes.

Diesel Technician

This cadre has also been declared as dying cadre and most of the incumbents are being entrusted with the duties of Sr. Technician. This cadre may also be merged with Senior Technician and then with Engineering Assistant as already agreed upon by Prasar Bharati Board.

Mast Technician

This cadre has also been declared as dying cadre and most of the incumbents are being entrusted with the job of Sr. Technician. This cadre may also be merged with Senior Technician and then with Engineering Assistant as already agreed upon by Prasar Bharati Board.

Senior Technician

•The cadre of Senior Technician should be merged with EA as both are placed in the same pay band with same grade pay of Rs.4200. The cadre of Senior Technician was created for our department only and no similar cadre exists in any other department. The combined cadre of Sr. Technician and EA, may be redesignated as Broadcast Engineer.

•Prasar Bharati Board has already passed a proposal for merger of Sr.Tech with EA and SEA with AE in its meeting held at Mumbai on 12 November 2005.

Engineering Assistant (To be re-designated as Broadcast Engineer)

The combined cadre of Engineering Assistants, Senior Technician, Diesel Technician & Mast Technician, irrespective of the date of their initial appointment, may be redesignated as Broadcast Engineer.

The qualification for the future intakes for the cadre of Broadcast Engineer may be changed as Degree in Engineering.

(Existing employees should be considered at par with the future recruits for promotional purposes.)

Details with Justifications for Broadcast Engineer(merged cadre of EA, Sr. Tech, Mast Tech. and Diesel Tech.)

- Present designation: Engineering Assistant/ Senior Technician/
Mast Technician/ Diesel Technician.
- Proposed designation: Broadcast Engineer
- Present required qualification: 3 year Diploma in Radio/
Telecommunications/ Electrical/
Electronics/ Electrical Communication
Engineering recognised by the Govt of
India or Degree with Physics as one of the

subjects from a recognised University or Degree in Electrical Engineering from a recognised university or equivalent degree or Diploma in Sound Recording and Sound Engineering awarded by the Film & TV Institute of India, Pune.

- Desirable: Knowledge of wireless of Radio Engineering.

- Broadcast Engineer (EA+ Sr. Tech+ M. Tech+ D. Tech)

- Proposed qualification for future recruitment: B.Tech /BE in Electronics/Electrical Engineering/ Information technology

- Present pay scale Rs. 6500-10500(EA joined upto 25.2.1999) & 5000–8000 (for EA joined after 25.2.1999)

- **Proposed pay scale & Gr Pay: Rs.9300 – 38400 & Rs 4600(Grade Pay)**

- System of entry into the cadre of Broadcast Engineer:
 - (a) Present: 80% through Direct Recruitment
10% through Departmental promotion from the cadre of Senior Technician based up on LDCE
10% Departmental promotion through seniority Cum fitness with an eligibility period of 3 yrs in Sr.Tech or 8 yrs combined in the cadre of of Tech & Sr.Tech..

 - (b) Proposed: 50% Direct Recruitment, 50% Departmental Promotion (10% through Qualified/DQE & 40% through Seniority – cum- fitness)

- System of Promotion to the next cadre of Senior Engineering Assistant from the

cadre of Engineering Assistant:

- Present: 100% through Seniority cum fitness to Senior Engg Asst and thereafter for the cadre of AE, 100% Departmental Promotion (75% through LDCE & 25% through Seniority–cum- fitness)
- System of promotion to the cadre of Broadcast Executiver from the cadre of Broadcast Engineer (EA+ Sr. Technician+ Mast Technician +Diesel Technician).
- Proposed: 100% through seniority-cum-fitness after the eligibility of 6 yaers of service

Justifications:

- Fourth and fifth Central Pay Commissions established the relation between pay scales and the professional cadres with minimum qualifications. Accordingly 5th CPC recommended the pay scale of Rs.6500- 10500 for the Engineering cadres carrying the minimum required qualification of 3 year Diploma. The 6th CPC has recommended the pay band of 9300 – 34800 with the Grade Pay of Rs.4600 for the cadres with minimum entry qualification of Degree in Engineering.
- Enhancement in minimum qualification for the future recruitment has been proposed in light of the advancement in broadcast technology since the inception of AIR/DD manual long back.
- As per the existing rules of DOP&T, the change in RR should not be to disadvantage of existing employees. Hence the existing employees should be considered at par with the future recruits for the promotional purposes.
- Prasar Bharati Board has already passed a proposal for merger of Sr.Tech with EA and SEA with AE in its meeting held at Mumbai on 12 November 2005.

Senior Engineering Assistant (To be re-designated as Broadcast Executive)

Senior Engineering Assistant's cadre should be merged with Assistant Engineer as presently Sr.E.A. & AE are placed in the same pay band with the pay grade of Rs.4600 & Rs.4800 respectively. Both these cadres are performing interchangeable duties at various stations. Both these cadres are Group B posts. Hence these two cadres may be merged into one cadre to be redesignated as Broadcast Executive with the pay band Rs.9300 – 38400 along with grade pay of Rs.5400/- in PB-2.

(Prasar Bharati Board has already passed a proposal for merger of Sr.Tech to EA and SEA to AE in its meeting held at Mumbai on 12 November 2005)

Present designation: Senior Engineering Assistant/ Assistant Engineer

Proposed designation: Broadcast Executive

Present pay scale: Rs. 7450 - 11500(SEA)
Rs. 7500 - 12000 (AE)

Present Requirement of Qualification for SEA as well as AE : Qualification required for direct recruitment of Engineering Assistyant

Proposed pay scale & Grade Pay: Rs.9300 – 38400 & Rs 5400 (Grade Pay)

- Broadcast Executive (AE + SEA)
- System of entry into the cadre:

- (a) Present: SEA: 100% Departmental Promotion through Seniority cum fitness from the cadre of Engineering Assistant

AE : 100% Departmental Promotion from (75% through Seniority–cum-fitness and 25% through LDCE
- (b) Proposed: 100% Departmental Promotion (through Seniority – cum- fitness) from the cadre of Broadcast Engineer.
- System of Promotion of Broadcast Executive to the next higher grade of Station Engineer/Dy Director(Engg) [STS]:
- Present: Departmental Promotion through Seniority cum fitness against 50% vacancies of Assistant Station Engineer(JTS) and thereafter for the cadre of Station Engineer (STS), 100%Departmental Promotion from ASE.
- Proposed: Departmental promotion through seniority cum fitness, after the eligibility of 3 years of service for Engineering Degree holder & 6 years of service for BSc/Diploma/ITI holders with the ratio of 33 1/3% for the candidates with the qualification of Degree in Engineering & 33 1/3 % for the candidates with Diploma in Engg/ ITI.

Broadcast Executive (AE + SEA) - Justifications:

Prasar Bharati Board has already passed a proposal for merger of Sr.Tech to EA and SEA to AE in its meeting held at Mumbai on 12 November 2005.

- The notification & resolution by the Ministry of Finance, implementing the recommendations of the 6th CPC has given two decisions:
 - Administrative Officer Grade II/ Sr. Private Secretary/ Equivalent working in organisations outside the Secretariat has been granted the pay scale of Rs.8000 – 13500 along with the Grade Pay of Rs.5400 on completion of 4 years. The Pay scale of 7500 – 12000 with the grade pay Rs 4800 has been provided for the fresh recruits on entry grade. (Part B, Section II.II.2 of notification dated 29/8/2008)
 - Group B officers of Departments of Posts, Revenue etc.will be granted Grade Pay of Rs.5400 in PB-2 on non functional basis after 4 years of regular service in the grade pay of Rs.4800 in PB-2. (resolution No.1.X.e.)
- a) & b) above prove that had the AIR and Doordarshan engineers' case been studied by the 6th CPC, AE, being a highly professional cadre in Broadcasting filed, might have been considered for the pay scale of Rs.8000 –13500 with the grade pay of Rs.5400 from the entry level itself.

Justification for promotion of Broadcast Executive to 66.7% vacancies in the STS – (33.3% for engineering degree holders and 33.3% for holders of BSc degree/Diploma in engineering/ITI trade Certificate:

The weightage of experience should not be denied to AEs serving in the organization who do not possess a degree in engineering, but nonetheless have got excellent track record in the field of maintenance and operation, servicing, installation, research and training activities. Such AEs have been deprived of promotion for too long due to the qualification barrier of an engineering degree for getting promotion from AE to JTS level. As many organized services have got a provision of promotion from AE to STS level, the same system needs to be adopted in AIR and Doordarshan. Other departments like CPWD, which is the largest department employing engineers, has been following this system. However with sophisticated technologies emerging in the field of broadcasting and proliferation of very complex digital equipments, the proposal for a system of promotion from AE to STS level may be accepted for those AEs who have got excellent track record and possess “very good” grading. Unless this filtering arrangement is incorporated, the Department’s interest will not be safeguarded in the face of a very stiff competition from private radio and TV

organizations who are using very sophisticated equipments and who have set very high technical standards in terrestrial broadcast, cable and satellite television and IP streaming..

Previously a system of promotion from AE to JTS level has already been agreed to by E-in-Cs and DGs of All India Radio & Doordarshan. Hon'ble supreme Court, in it's verdict on 06/12/2003 in the case of opening promotional channel for AEs of AIR & DD possessing Diploma/BSc., has also observed that "Such a stagnation is not healthy for any department and it is upto the department to find out some ways to remove the stagnation in consultation with association representing the employees". Accordingly, Prasar Bharati & DG:AIR had prepared the proposal for promotion of degree and diploma holders in AE's cadre on the basis of differential length of service. Similar criteria may be made applicable to SEA holding ITI trade certificate for further promotion to AE.

viii. Duties & Responsibilities of the proposed cadres

4.1 All India Radio

4.1.1. Duties of Broadcast Executive

- i. The main responsibilities of Broadcast Executive will be to organize and supervise all the activities relating to operation and maintenance of Transmitter, studios-complex, studio-transmitter links, captive earth stations, satellite downlinks and O.B. equipments. He will be the supervisor of the maintenance and operation team as well as one who will provide necessary back-up and technical support to his team to achieve the goals.
- ii. He will be Shift-in-Charge at high power transmitters(50 KW and above) or a group of high power transmitters and major studio centers at the Metro cities (Above Type IV studios).
- iii. In-charge of maintenance and operation of hardware and software for server/client based studio automation system for transmission /recording /editing /dubbing /transcription of programmes as well as news automation systems and to act as a system administrator for server/client based studio networking system. The responsibilities will also include operation and

maintenance of Master Switching Room (MSR) routing different studios to different transmission lines including Satellite Linking through server based system within the studio complex.

- iv. Incharge of all activities in IT Section
- v. In charge of OB activities: supervision of operations regarding (a) receiving feeds at the control room through landline/leased line/ISDN line/satellite links (b) execution of live/event coverage at the O.B. spot(c) sending feeds on line/satellite channel (d) maintenance of equipments meant for O.B. coverage such as O.B. Mixers/Amplifiers, audio codecs, INMARSAT Terminals, mobile and fly-away digital satellite news gathering equipments including generators/A/C plants installed in the DSNG Vans
- vi. In charge of supervision of maintenance and operation of STL(microwave and digital line) /Satellite up links and down link equipment/other auxiliary equipments
- vii. In-charge of maintenance team for transmitter and its sub-assemblies including feeder lines and aerials
- viii. In charge of supervision of maintenance and operation of ancillary equipments such as A/C Plants, Diesel Generators, UPS, RN Dishes, etc
- ix. In charge of trouble-shooting and servicing of Transmitter/ Studio/ STL/Satellite up links and down link equipmen and/or other auxiliary equipments
- x. In charge of testing and measurement teams at the Transmitter/Studios/ STL/ Satellite up link and down link equipments
- xi. Installation and testing of new Transmitter/Studio/STL/Satellite uplink and downlink equipments
- xii. Procurement of stores/spares for operation and maintenance of broadcast equipments and other auxiliary/ancillary items.
- xiii. Engineering administration of the technical set-up
- xiv. Supervision of maintenance and operation of Gyan vani FM Transmitters
- xv. Supervision and maintenance of technical infrastructure rented out to private operators for generation of revenue
- xvi. Liaison with the Civil/ Electrical wing for maintenance of buildings/approach roads/water tanks/staff quarters

- xvii. Liaison with Electricity Boards and other agencies in connection with smooth running of the broadcast
- xviii. Any other technical responsibilities at stations/office of All India Radio as may be assigned to him/her.

4.1.2. Duties of Broadcast Engineer

To perform Transmission duties at Studios, Transmitting Centres and Captive earth station which will comprise of:

- i. Operation and maintenance of all audio equipments in the studios including microphones, transmission /recording/dubbing/switching consoles, tape decks/recorders, C.D. Players, hard disc based work stations, servers, routers, computer networking, upload of data on internet, wires and cables, phone-in-consoles, signaling systems, monitoring system, , clock system, emergency light system, O.B. equipments, audio codecs, digital news gathering equipments in the studios and other related electronic equipments
- ii. Operation and maintenance of hardware/software for computerized
- iii. Monitoring and control of the strength, clarity, and reliability of incoming and outgoing audio signals in the studios and providing necessary adjustments to maintain quality broadcast
- iv. Operation of Transmitter to ensure that R.F. emission takes place at full power and modulation with optimum figures of noise level, distortion and frequency response
- v. Preventive maintenance of Transmitter along with sub-assemblies and auxiliary equipments , aerial fields, R.F. feeder, antenna, antenna tuning unit, antenna/feeder selector unit, etc and solving breakdowns in the Transmitter
- vi. Operation and maintenance of Captive Earth stations, microwave links , R.N. Receive Terminals, INMARSAT Terminal, etc
- vii. Operation and maintenance of A/C Plants, Diesel Generators, H.T./L.T. Switch Gear, UPS,etc
- viii. O.B. Coverage
- ix. Servicing of defective equipments and performing complex nature of jobs under the supervision of senior staff members

- x. Assisting Broadcast Executive and other senior staff in operation and maintenance of Studios, Transmitting Centres, Captive earth station, A/C Plants, Diesel Generator, and other related works
- xi. Assisting Broadcast Executive and other senior staff in installation works and other technical activities as may be assigned to him/her
- xii. Maintenance of Log Books and equipment records/ preparation of reports
- xiii. Keeping tool box ready for use
- xiv. Up-keep of first aid-box/safety belts/fire-fighting equipments
- xv. He will supervise all the mast /antenna works in Transmitters
- xvi. He will supervise all the Diesel Engine works in Transmitters/studio complex's/ Earth stations and O.B.Vans.

4.1.3. Duties of Broadcast Technician

- i. Placing microphones in the studio and connecting them to the audio-console via microphone cables; Operating the mike fitted in the studio; helping engineer in the testing of microphones, headphones, inter-communication systems, tape recorders, turn table etc., Checking and maintaining all the tools provided in production control room and, keeping their record.
- ii. Checking emergency light system.
- iii. Assisting engineers in the maintenance of audio equipments.
- iv. Assisting Engineers-on-duty in operation and maintenance of transmitter equipments in Transmitter complex.
- v. Operation and Maintenance of A/c plants, DG sets, Antenna Tuning Unit, electrical installations including switch gear room and other broadcasting equipments at studio and transmitter.
- vi. Attending minor faults during the shift in studio as well as transmitter complex.
- vii. To assist the senior engineering staff in repair and maintenance of server based equipments and computers in studio and transmitter complex.
- viii. To handle particularly complex jobs at the discretion of his superior officers.
- ix. To assist the operational staff at Transmitters, Studio, Captive earth Station and outside Broadcast etc. for maintaining the continuity of service.
- x. To assist in aerial selection, stub changing, reversals of beams etc. in the aerial field and manning and operating feeder-switching structures etc.
- xi. To operate and run stand by/power supply units

- xii. To assist the engineering staff in repair and maintenance of equipments
- xiii. To assist in special maintenance and test of aerials, feeder lines, air conditioning plants, tape recorders, stand-by equipments, stand-by power supply arrangements and other ancillary plants and equipment.
- xiv. To check-up and maintain the fire fighting appliances tools and batteries, clock circuits, torches and lamps etc. at regular intervals
- xv. To check monitoring circuits, intercom circuits and emergency lighting arrangements and report any fault
- xvi. To check tools and keep them in good working order after necessary repair.

Duties and responsibilities of Broadcast Technician for Mast /antenna works in Transmitters

- i* To work on installations up to a high of 150 feet.
- ii* To check, repair and paint masts or other structures upto a height of 1000 feet.
- iii* To assist Engineering Staff in aerial matching and associate measurements.
- iv* Installation and maintenance of guys, aerials, feeders, feeder poles, obstruction lights, cables etc.
- v* To check up correctness and quality of mast work done by contractors.
- vi* To replace or repair mast lights
- vii* Any other item or work relating to masts and feeders

Duties and responsibilities of Broadcast Technician for Diesel Generators in Transmitter, Studios, etc

- i.* To undertake preventive maintenance of diesel generators by applying his expertise and knowledge in running and maintaining diesel generators and associated accessories.
- ii.* To operate diesel power plants

iii.

4.1.4. Duties of Broadcast Assistant

- i* To help in the arrangement of tools of work bench
- ii* To provide technical help to engineering staff in the various works at Studios Transmitters etc.
- iii* To help in the transportation/movement of equipment
- iv* To help in maintenance, cleaning of panels testing etc. in broadcast centres
- v* To assist in carrying out minor installation works at stations
- vi* To assist in carrying out installation and testing of transformers, studio, receiving centers, aerials, feeder sub-station equipments, air conditioning plants. Diesel/Petrol generating sets and other associated works including cabling and wiring
- vii* To assist in periodical changing of oil in oil-filled components and in testing the oil
- viii* To assist in checking of engineering stores
To assist in Operation of diesel power plants
- ix* To assist in Carrying out schedule of preventive maintenance of diesel plants and associated accessories
- x* To assist engineering staff in carrying out Mast/antenna work in Transmitters.
- xvii.* To assist engineering staff in carrying out preventive maintenance of diesel engines in Transmitters/studio complex's/ Earth stations and O.B.Vans.

To perform such work as may be assigned by superior officers in the interest of service

4.2. Doordarshan

4.2.1. Duties of Broadcast Executive

A Technical Director

- i.* Act as the link between the Producer of the programmes and the entire technical crew.

- ii.* Offer suggestions to the Producer of the programme on all engineering matters regarding recording/transmission of the programme from the studio.
- iii.* Attend Programme/transmission planning meetings and offer technical suggestions suitably.
- iv.* Scrutinize and implement with the help of technical-operations crew 2nd lighting plot, audio arrangements and other special technical requirements in the studios and at OB spots.
- v.* Coordinate exchange of signals and their timing between the production control room and other technical areas like VTR, MSR, Transmitter, OB spot etc.
- vi.* Check programme material like videotapes, audiotapes and films well in time for recordings/playbacks.
- vii.* Ensure proper operation of all the equipments in the studio chain viz, cameras, vision-mixer, audio-mixing desk, VTRs, inter-communication, signal distribution etc., and advise the Producers about any change of plans necessary due to technical considerations.
- viii.* Man end-control position and adjust the video signals for proper levels of the various parameters.
- ix. Ensure proper coordination amongst all members of the technical, operations crew and arrange substitution of duties wherever necessary.
- x. Maintain log of studio activities during transmission and recording for submissions to senior engineering officers.

B On Line Director/Editor

- i. Attending planning meeting for programme recording/transmissions and suggest changes in camera script/cue-sheet necessitated due to technical considerations.
- ii. Studying the camera-script together with the programme production staff and planning technical interpretations of the aesthetic requirements of the programme, as determined by the Producer of the programme.

- iii. Studying the transmission cue sheet and planning the technical operations in coordination with audio-engineer, lighting-engineer, VTR & server engineer.
- iv. Checking vision – mixer input signals from all areas.
- v. Checking and aligning all monitors in the production control room of the studio for optimum matching.
- vi. Checking the operational performance of all the necessary functions of the vision mixer and remote controls for proper functioning.
- vii. Checking and adjusting the clock system.

C Transmitter Engineer

- i. He will be Shift-in-Charge at high power transmitters(or a group of high power transmitters). He will be overall responsible for proper functioning of the transmitters and all other associated equipments.
- ii. He will be the overall Incharge of all LPT's as well as incharge of Administrative and Technical activities including maintenance.
- iii. He will coordinate with studio and/or MSR for lining up of programme input equipment chains before each transmission.
- iv. He will test the transmitters including stand-by arrangements like spare transmitter, diesel generators, air-conditioning units and spare exciter rack etc., prior to transmission.
- v. He will man the Control desk to continuously monitor the technical quality of the picture both at input and at output of the transmitter, and take necessary corrective measures in case of power failure/equipment failure.
- vi. He will ensure safety precautions in respect of high voltages, earthing, aviation obstruction lights and first aid kit etc.
- vii. He will carry out periodic maintenance as per approved schedule including special work like value changes, test major spares, take performance measurements, and keep records of the same.
- viii. He will carry out survey of the reception of signals in the service area including the field strength measurements at periodical intervals, as required.

D MSR Engineer

- i. Incharge of all activities in MSR for Networking Switching.
- ii. Ensure proper functioning of all switching, monitoring, inter-communication, and associated equipments including TVRO and DRS.
- iii. Check the daily schedule of programme exchange and finalize routing plan. Incorporate changes in the schedule taking into account technical considerations.
- iv. Coordinate with TD/MW engineer, transmitter engineer/OB engineer and checking technical quality of incoming programmes and incorporate additional circulatory wherever necessary.
- v. Periodically test BSNL/MTNL Microwave link circuits jointly with BSNL/MTNL staff.
- vi. Coordinate with satellite stations/OCS to confirm timings and availability of booked circuits; ensure technical quality in respect of standards and levels, routing of audio and video signals from foreign organization etc. Arrange audio & video conferencing between various centers in the network and with foreign organizations.

E Captive Earth Station

Incharge of all activities in Captive Earth Station

- i. Responsible for the up linking and down linking of the signals from various channels of Doordarshan.
- ii. Operation and maintenance of equipments used for the up linking , down linking and monitoring of audio & video signals in the Earth station.

F Electronic News Gathering (ENG)

Incharge of all activities in Electronic News Gathering (ENG):

- i. In-charge of maintenance section
- ii. execute and supervise the maintenance of all the equipments related to ENG Maintenance section.

- iii. Liaison with higher officers and staff for the smooth functioning of previews in different locations.
- iv. Upkeep and maintain the record of all related equipments of ENG Maintenance section.
- v. Performance appraisal of sub ordinate engineering staff of ENG maintenance section.
- vi. Execute and supervise the PM ,V V I P and other national coverages, specially Prime Ministers' national & international meets/visits/conferences.

G IT Section

Incharge of all activities in IT Section

1. Maintenance of NLE,s
2. 3D Graphics, CG
3. Computer PC,s , and other equipments related to IT -maintenance section.
4. Installation of NLE Suites and Preview setups with Laptop or PC in different location.
5. Perform the previews in Prasar Bharti Office in PTI Building, Doordarshan Directorate Office and when ever required in Ministry also.
6. In charge of maintenance section
7. Execute and supervise the maintenance of all the equipments related to IT Maintenance section
8. Liaison with higher officers and staff for the smooth functioning of previews in different locations.
9. Upkeep and maintain the record of all related equipments of IT Maintenance section.
10. Performance appraisal of sub ordinate engineering staff of IT maintenance section
11. Supervise the new installation of NLE edit suites and prepared the monthly maintenance report and other related activity report of the section etc.

H Doordarshan Archives

1. Incharge of all activities in doordarshan Archives
2. Incharge of Archive maintenance section:
3. Maintenance of all archiving equipments i.e VCR,s,(all format) AMPEX ,BCN m/c Dubbing suites, restoration equipments (Noise reduction and Digital restoration system), Media Asset management system, Tape cleaning m/cs. Linear and non linear editing systems with software base restoration system, Tape library metadata management system and other equipments related to Archive maintenance section. Installation of Dubbing Suites and Preview setups.
4. Upkeep and maintain the record of all the related equipments of Archive maintenance section.
5. Performance appraisal of sub ordinate engineering staff of Archive maintenance section and supervise the new installation of archiving equipments and give the technical certificate of archiving materials and prepared the monthly maintenance report and other related activity report of the section etc.

I. VTR Section

1. In charge of all activities in VTR Section including VTR maintenance section: Maintenance of VCR,s Edit Controllers, Video Monitors, Audio Consoles Ample speakers and other equipments related to VTR - maintenance section. Installation of Edit Suites and Preview setups in different location. Perform the previews in Prasar Bharti Office in PTI Building, Doordarshan Directorate Office and when ever required in Ministry also.
2. Liaison with higher officers and staff for the smooth functioning of previews in different locations. Upkeep and maintain the record of all related equipments of VTR Maintenance section.
3. Performance appraisal of sub ordinate engineering staff of VTR maintenance section and supervise the new installation of edit suites and prepared the monthly maintenance report and other related activity report of the section etc.

J O.B./DSNG Vans

1. Incharge of all activities in O.B./DSNG Vans
2. Supervision of operations regarding (a) receiving feeds at the control room through landline/leased line/ISDN line/satellite links (b) execution of live/event coverage at the O.B. spot(c) sending feeds on line/satellite channel (d) maintenance of equipments meant for O.B. coverage such as O.B. Mixers/Amplifiers, Camers, VTR's, Lighting Equipements and Microplones, digital satellite news gathering equipments including generators/A/C plants installed in the DSNG Vans.

K Microwave Units

- a. Incharge of all activities in Microwave Units
- b. In charge of supervision of maintenance and operation of STL(microwave and digital OFC Links) /Satellite up links and down link equipment/other auxiliary equipments

L. Maintenance Engineer

1. Responsible for the maintenance and servicing of defective equipments in various areas. I
2. In-charge of maintenance and operation of hardware and software for server/client based studio automation system for transmission/Video recording/vodeo-editing/dubbing/transcription of programmes as well as news automation systems and to act as a system administrator for server/client based studio networking system .
3. The responsibilities will also include operation and maintenance of Master Switching Room (MSR), routing different studios to different transmission lines including Satellite Linking through server based system within the studio complex.

M. As Installation Engineer

Responsible for the proper installation of new equipments systems/technical facilities at the Kendra.

N. As Stores/Purchase Engineer

Responsible for the procurement of engineering stores and management/Control of inventory at the Kendra.

4.2.2.Duties of Broadcast Engineer

Broadcast Engineer shall primarily perform operational duties in various areas in the studio, captive Earth Station and Transmitters. He shall performing duties like vision mixing, camera control, lighting, audio, VTR transmitter, microwave links, field recording on VCR, Sync sound studio, receiver section, MSR, etc., and assist engineering officers in the maintenance and installation of equipments/technical facilities and in Stores work at Doordarshan Kendras/ TV Relay Centers. This is in addition to any other work assigned to them from time to time by senior engineering officers.

Their detailed duties are as under:

A. Vision Mixing:

- i. Checking vision – mixer input signals from all areas.
- ii. Checking and aligning all monitors in the production control room of the studio for optimum matching.
- iii. Checking the operational performance of all the necessary functions of the vision mixer and remote controls for proper functioning.
- iv. Checking and adjusting the clock system.
- v. Reporting on all minor/major faults to the Technical Director and assisting him in their rectifications.

B Camera Control

- i. Checking electrical and mechanical working of all the Cameras well in advance for proper operation of the dollies, pan and tilt head, view-finder, zoom and focus controls of the lens, the balance of the camera, and to make adjustments wherever necessary.
- ii. Checking all the controls of the Camera, main control panel and remote control panel for normal operation of this and pedestal etc.
- iii. Lining up all the cameras as per the prescribed procedure including white-balance, black-balance, registration etc., and effecting corrections wherever necessary.
- iv. Cross checking with the vision mixer the camera inputs to the switcher for proper levels.
- v. Checking and ensuring the efficient operation of camera producer-CCU/TD inter-communication system.
- vi. Checking the Camera picture quality, during blocking and rehearsal and suggesting changes to lighting engineer/producer in lighting plot to enhance the overall technical quality of the programme.
- vii. Following the Camera script for production during the rehearsals and Planning camera controlling sequence accordingly for subsequent implementation during recording/transmission.

C. Lighting:

- i. Attending planning meeting for recording/transmission and suggesting changes in camera angles/light Plan/cue sheet due to technical consideration for the overall improvement of programme quality.
- ii. Preparing lighting-plot in consultation with Technical Director/Producer, ensuring optimum technical quality & meeting the aesthetic requirements of programmes.
- iii. Briefing the supporting staff for proper implementation of the lighting plan in respect of physical locations and in consultation with audio-engineer to eliminate boom/microphone shadows.
- iv. Implementing, physically, the lighting plan ensuring prescribed precautions and effecting changes wherever necessary.
- v. Operating Lighting Control Panel during recording/transmission.

- vi. Continuously monitoring the technical quality of the picture from the Camera from the point of view of lighting and effecting corrections on the spot in close liaison with CCU Engineer.
- vii. Ensuring satisfactory operation of light fittings and power distribution system taking into account all electrical and mechanical safety precautions.
- viii. Attending to routine servicing and maintenance of lighting system.
- ix. Maintaining all records in respect of life of bulbs, fittings etc.

D. Audio:

- i. Attending planning meeting for productions and finalizing audio arrangements to meet the requirements of the production, planning and implementing the microphone placement plan for recordings/transmissions.
- ii. Planning and implementing audio effects for programme production in consultation with the programmer and TD.
- iii. Checking the audio console thoroughly for all its functions, including pre-listening, fold back and echo etc., checking all inputs signals for levels and quality and effecting necessary individual channel equalizations.
- iv. Checking the audiotapes for the duration and cue marks along with the programme Production staff.
- v. Attending planning meeting for transmission and suggesting changes found necessary on account of operational constraints.
- vi. Ensuring all the tapes necessary for the transmission are available in proper order of sequence, checking all the cuts, their durations and cue marks along with programme Production staff.
- vii. Ensuring that the audio signals to all the areas (VTR. TK. XTR. MSR. MW etc.) are available and checking their quality and levels before each recording and transmission.
- viii. Checking and adjusting the levels of inter-Communication links between the producer, studio and all other technical areas.
- ix. Checking and ensuring the satisfactory working of the studio loud-speaker and fold-back reservation systems.

- x. Manning the audio-console, tape-recorders, turntable during the recording and transmission and maintaining the individual and relative levels as per the requirements of the production or transmissions.

E Non Linear Editing:

Operation and maintenance of equipments using for Non-Linear editing.

F Digital satellite News Gathering (DSNG):

- i. Operation and maintenance of the uplinking of different OB signals from OB spot to the Studio centre in digital format.
- ii. Operation and maintenance of equipments used in DSNG

G Captive Earth Station:

Operation and maintenance of equipments using for the up linking , down linking and monitoring of audio & video signals in the Earth station.

H Master Switching Room:

- i. Testing of switching, monitoring, intercommunication and associated equipment in MSR including TVRO and DRS.
- ii. Attending along with Broadcast Executive the daily meeting to discuss the schedule of programme exchange and prepare a routine plan.
- iii. Checking technical quality of incoming and outgoing signals and setting and variable controls for a particular set up.
- iv. Checking and aligning monitors and audio monitoring system and adjusting levels.
- v. Manning of switching console and timely change over and continuous monitoring of incoming and outgoing signals.
- vi. Attending to faults and assisting MSR engineer in maintenance of equipment.
- vii. Checking to ensure proper operation of intercom links with other areas.

I. Electronic News Gathering (ENG):

- i. Testing and aligning the ENG gear along with the cameraman for satisfactory audio/ video operation of the unit.
- ii. Offering suggestions or assistance to the cameraman in respect of operation of camera viz-filter settings, video Level, white-balance, registration etc.
- iii. Operating the recorder during the recording at location and checking the recording for optimum quality.
- iv. Maintaining records of the performance of equipment at locations and report any manufacturing to senior officers at the base.
- v. Keep essential tools and attending to the minor faults at location.
- vi. Assisting the senior engineering officers in the maintenance of ENG equipment.

J VTR / Server

- i. Operating the VTR during the recording/playback/editing etc.
- ii. Previewing tapes for recording/transmission, playback along with programme production staff, checking and confirming the audio track to be used and briefing the audio engineer accordingly.
- iii. Operating the Servers – the hard disc based Recording /Play back system
- iv. Maintaining records of recording/Playback of tapes.
- v. Maintenance of VTRs/ servers
- vi. Ensuring proper functioning of intercom links with other areas.

K. Archive-Maintenance section

- 1. Assistance for the maintenance of archieving equipments and other equipments related to the archive maintenance section.
- 2. Checking the quality of the ingested material in media asset management system, dubbing and restoration audio and video.
- 3. Installation of dubbing suites, preview setups and any other work assigned

L. IT-Maintenance section

- 1. Assistance for the maintenance of all computerized equipments and other equipments related to the IT maintenance section.

2. Performing previews in different location. Installation of NLE edit suites, preview setups and any other work assigned by the seniors

M. Sync Sound Studio:

- i. Testing the sync sound transfer machine(s) tape recorders, audio-video monitors, turn tables, echo units, audio console and other associated equipment for satisfactory/operation.
- ii. Transferring the sound from 16 mm tape to 1/4" audio tape or from 1/2" to 1/4" audio tape for capsuling for a particular programme.
- iii. Attending to minor faults at the time of operation reporting Major faults to the T.D. or AE incharge of the film Section.
- iv. Checking the projection system in the Studio and the associated remote control.
- v. Checking placement of microphone, testing and adjusting level and balancing for audio recordings and operation of audio console.
- vi. Checking functioning of film equipment in other areas like editing, processing and preview.

N Microwave Link

- i. Assisting members of staff during the bench test, installation at the transmitting/receiving and lining up of the equipment.
- ii. Ensuring proper packaging and testing of the equipment before movement to and from OB spot and unpacking at the other end.
- iii. Manning the control units during transmission/reception.
- iv. Establishing the voice communication link between the transmitter/receiver.
- v. Assisting in routine measurement on MW chain for optimum performance.
- vi. Ensuring proper operation of intercom links with other areas.

O Transmitter:

- i. Assisting the Broadcast Executive-on-duty for proper working of transmitting and associated equipments.
- ii. Periodical logging of meter readings.

- iii. Carrying out routine maintenance of transmitter and power supply equipments.
- iv. Constant monitoring of audio/video signals received from control-room/TVRO/DRS and demodulated signal of transmitter.
- v. Checking and maintaining the impress stores of the transmitter.
- vi. Checking the normal functioning of D.R.S./TVRO relay receivers where provided at the transmitter site for relay of programmes.
- vii. Ensuring proper functioning of intercommunication links with other areas.

P Maintenance/Installation

Assisting the Broadcast Executive in-charge of maintenance/installation teams in the servicing of defective equipments in various areas and installation/commissioning of new equipment systems/technical facilities at the Kendra respectively.

Q Purchase/Stores

Assisting the Broadcast Executive of the engineering stores in the checking/testing of equipments/spares, maintenance of records and preparations of various returns.

4.2.3.Duties of Broadcast Technician

Broadcast Technician shall perform the operational duties and functioning in the absence of Broadcast Engineer. *Broadcast Technician shall* primarily assist *Broadcast Engineer* in the maintenance of equipment in various technical areas and in the operational activities of audio/lighting/ air conditioning / transmitter and other areas. This is in addition to any other work assigned to them from time to time by superior engineering officers. The details of their duties are as under.

A Audio Side

- i. Placing microphones in the studio and connecting them to the audio-console via microphone cables; operating boom-mike fitted in the studio; helping audio-engineer in the testing of microphones, headphones, inter-communication systems, tape recorders, turn table etc., removing mikes, audio cables and other

- associated portable and loose audio equipment used for programme and keeping them in proper place after recording/transmission.
- ii. Checking and maintaining all the tools provided in production control room and, keeping their record.
 - iii. Checking emergency light system.
 - iv. Remaining present in Studio during recording/transmission for shifting the mikes and connectors and keeping in constant touch with audio-engineer via headset.
 - v. Ensuring general cleanliness of equipment, decks, Consoles, glass-partitions, doors etc. in the technical-areas.
 - vi. Assisting engineers in the maintenance of audio/PCR equipments.
 - vii. Checking and replenishing first-aid box material.

B Lighting Side

- i. Testing of lighting system including moving light battens and essential studio lighting
- ii. circuits wherever provided.
- iii. Positioning and adjusting light fixtures in the studio/OB location as per instructions from the engineers.
- iv. Operating lighting switchgear system.
- v. Keeping a watch on the lighting system for any abnormality like blow outs, overheating of connectors, cables, fixtures and other before during and after the programme.
- vi. Attending to faults like replacement of fuses, cables, connectors, bulbs, lenses etc. during recording transmission shifts.
- vii. Ensuring general upkeep of lighting fixtures and moving light batten-system for proper
- viii. electrical and mechanical operation and taking all electrical and mechanical safety precautions.
- ix. Testing of intercom links between lighting control and switchgear rooms.
- x. Checking tools, clock, first-aid kit, wherever provided, in lighting control room.

C Transmitter Side

- i. Assisting Broadcast Engineers-on-duty in operation and maintenance of transmitter equipment.
- ii. Testing/checking clocks/emergency lights/first-aid kit provided in transmitter
- iii. Checking power supply switchgears and electrical sub-station equipments for normal functioning under the guidance of Broadcast Engineer on duty.
- iv. Testing and operating the standby diesel generator(s).
- v. Assisting the Broadcast Engineer in the installation/alignment of MW/TVRO/LDRS links.
- vi. Attending to minor faults during the shift.
- vii. Operating air-conditioning plants and window type air-conditioners.

D. Air-Conditioning Side

- i. Operating A/C plants and window type air-conditioners.
- ii. Periodic logging meter readings in A/C room and temperature/humidity readings in
- iii. different air-conditioned areas.
- iv. Keeping constant watch on A/C equipment in shift for normal functioning.
- v. Routine checking of power supply switchgear provided in A/C Plant rooms.
- vi. Carrying out maintenance of A/C Plants and window Type air-conditioners under the guidance of Engineers.
- vii. Attending to minor faults during the shift.

E. Digital Satellite News Gathering (DSNG):

Assisting the Broadcast Engineers for the uplinking of different OB signals from OB spot to the Studio centre in digital format.

Assisting the senior officers in the operation and maintenance of equipments using in DSNG

F. Captive Earth Station:

Assisting the engineers for the up linking and down linking of the signals from various channels of Doordarshan

Assisting the engineers in the operation and maintenance of equipments using for the up linking , down linking and monitoring of audio & video signals in the Earth station.

G. Maintenance/Installation

Assisting the Broadcast Engineers in charge of maintenance/installation teams in the servicing of defective equipments in various areas and installation/commissioning of new equipment systems/technical facilities at the Kendra respectively.

H. General Maintenance

Assisting maintenance Engineer in the maintenance of equipments in various technical areas.

- i. Checking master/Slave Clocks in Coordination with various section.
- ii. Checking emergency lights and charging batteries provided in each section.
- iii. Checking house lights in various technical areas.
- iv. Checking tools, portable test and measuring equipments and maintaining a record of their movements.
- v. Checking technical pamphlets available in maintenance Section.
- vi. Supervising general cleaning of the floors in technical areas in association with the Broadcast Assistant.
- vii. Broadcast Technician is required to work on transmitting masts/towers at the transmitting centers: His duties include the following works in addition to any other work assigned by the superior engineering Officers from time to time:

(a) Installation and testing of Parabolic dish antenna and equipments of the microwave links on tall structures/buildings for establishing Programme link between the OB spot and the center.

- (b) Testing and operation of diesel generator(s) where not co-located with transmitter
- (c) Repairing electrical fittings, cables on the mast
- (d) Attending to antenna-feeders, distribution transformers and other fixtures in the antenna system mounted on tower.
- (e) Laying Cables and providing other manual help in installation of MW links during OB/ENG Coverage's.

4.2.4. Duties of Broadcast Assistant

Broadcast Assistants shall primarily perform following duties, in additions to any other work assigned to them by their superiors from time to time.

- i. Helping Broadcast Executive/. Broadcast Engineer in the maintenance of equipments.
- ii. Maintaining cleanliness of equipments and technical furniture in technical areas.
- iii. Shifting of equipment/furniture.
- iv. Helping technical operations staff in lighting, audio, air-conditioning equipment maintenance and installation work.
- v. Locking/opening of technical area in presence of the shift-incharge.
- vi. Working as Camera dolleyman/cableman in studio/OB spots.
- vii. Laying Cables and providing other manual help in installation of MW links during OB/ENG Coverage's.
- viii. Assisting in attending the antenna-feeders, distribution transformers and other fixtures in the antenna system mounted on tower.
- ix. Replacing fused mast lights
- x. Repairing electrical fittings, cables on the mast.
- xi. Carrying out routine maintenance of electrical mechanical fixtures of the mast including mast lifts. Installing equipments and fixtures on the tower.
- xii. Assisting in Installation and testing of Parabolic dish antenna and equipments of the microwave links on tall structures/buildings for establishing Programme link between the OB spot and the center. Testing and
- xiii. operation of diesel generator(s) where not co-located with transmitter
- xiv. Checking/filling the water in water reservoir for fire hydrant and periodic checking of fire fighting facilities in the premises.