

**Performance Audit
relating to
Government Company**

Chapter II - Performance Audit relating to Government Company

Performance Audit on 'Implementation of Restructured-Accelerated Power Development and Reforms Programme component in Assam under Integrated Power Development Scheme' by Assam Power Distribution Company Limited

Executive Summary

Introduction

The Government of India (GoI) launched (December 2008) the Re-structured Accelerated Power Development and Reforms Programme (R-APDRP scheme/Scheme). The basic objective of the Scheme was to reduce Aggregate Technical and Commercial (AT&C) losses in the power distribution sector of the Country. The Integrated Power Development Scheme (IPDS) launched by GoI in December 2014 subsumed the existing R-APDRP scheme. The IPDS guidelines, however, envisaged continuation of the R-APDRP scheme as a separate component of IPDS based on the existing Scheme guidelines. The present Audit Report covered the performance of the Company in conceptualisation, implementation and achievement of the objectives of the R-APDRP scheme during the period from April 2009 to March 2017.

Planning

The Company did not prepare any comprehensive plan for implementation of the Scheme works in the State. This had resulted in preparation of defective Detailed Project Reports, tardy implementation and non-completion of the project even after eight years of approval (November 2009) of the Scheme.

Project funding

The GoI sanctioned (November 2009 to February 2012) ₹775.25 crore towards its share of Scheme funding against the approved cost of ₹881.18 crore. GoI released (March 2010 to May 2017) ₹489.84 crore out of the said funds sanctioned. The Company had utilised the GoI funds of ₹430.81 crore (88 per cent) on the Scheme works so far (September 2017).

Project Management

In Assam, the Scheme involved 67 project areas each for Part-A (excluding Supervisory Control and Data Acquisition project) and Part-B projects. The Supervisory Control and Data Acquisition (SCADA) project was implemented only

in one project area (Guwahati). Audit selected 17 project areas for detailed examination for both Part-A and Part-B works, out of the 67 project areas. Audit also selected the Guwahati project area for detailed scrutiny of the SCADA project, which was being implementation in this area.

The R-APDRP scheme was to be in two parts, viz. Part-A and Part-B. Part-A of the Scheme involved preparation of baseline data of consumers and metering of distribution transformers and feeders. Part-A works also involved commissioning of Geographic Information System (GIS) mapping as well as SCADA system for real-time monitoring and control of distribution network system. Part-B of the Scheme envisaged strengthening sub-transmission and distribution network, replacement of electro-magnetic energy meters with tamper proof electronic meters etc. The R-APDRP scheme guidelines envisaged completion of the project by November 2014. GoI subsequently extended (July 2017) the scheduled completion period of pending works upto March 2018.

Part-A

The Company declared (November 2013 to March 2016) all Part-A works under 67 project areas as ‘Go-live’ after a delay ranging from 10 to 39 months from the schedule date (January 2013). The status of on-line data communication of the meters in 17 selected project areas, however, remained poor. This was due to defective meters and modems, defective Data Concentrating Unit, failure/non-availability of General Packet Radio Service (GPRS) connectivity etc. The Company, thus, could not avoid human intervention in data communication for energy accounting and auditing despite declaration of the project as ‘Go-live’.

SCADA Project

The SCADA project involved commissioning of SCADA equipment and their integration with the SCADA control centre. The Company could not integrate the equipment with the SCADA system to achieve the basic objective of online communication. The Company could install only 29 Remote Terminal Units (RTUs) so far (September 2017) out of total 36 RTUs scheduled for installation by September 2013. The Company could make only 13 RTUs operational through SCADA control centre out of these 29 RTUs. The Company could not develop the Distribution Management System (DMS), which was one of the functional aspects of SCADA system. The Company, thus, generated various control and monitoring reports based on ‘alarm data’¹ of SCADA application. There were discrepancies and inconsistencies in the alarm data/alarm reports, which caused generation of erroneous reports. The objective of the SCADA system was to have on-line control

¹ Data generated by the SCADA system in case of any fault in the SCADA network.

and monitoring over the distribution network system without any human intervention. The Company could not achieve this objective due to inaccurate/non-generation of MIS reports.

Part B

The Part-B project consisted of work relating to strengthening of distribution system so as to attain the AT&C loss at a level of 15 per cent on sustainable basis. The Part-B project works were originally scheduled for completion within three years (by November 2014) from the date of sanction (November 2011). The Company could not complete Part-B works within the original scheduled period in any of the 67 project areas. GoI as such had to provide several extensions from time to time upto March 2018. The Company despite these extensions could complete the works only in 47 out of 67 project areas so far. The works in balance 20 project areas were ongoing (September 2017).

Scrutiny of 17 project areas selected for detailed examination revealed that Company completed works under 9 project areas with a delay of 227 to 603 days beyond the prescribed period (540 days). The Company could not complete the works in the remaining 8 project areas even after delay of 664 to 1,157 days beyond the prescribed period (540 days) (September 2017).

The Company had taken excessive time in evaluation of bids as well as finalisation of project sites. The Company had also taken unreasonably long time in resolving the issues relating to approval of additional materials, non-availability of project site and Right of Way (RoW) problems. The said lapses on part of the Company had caused delays at various stages of project execution. Further, the Company could achieve the targeted level of AT&C losses (15 per cent) only in 5 Part-B project areas out of total 47 completed project areas completed by the Company.

Monitoring

The GoI formed (June 2009) the State Level Distribution Reforms Committee (SLDRC) headed by GoA to ensure effective monitoring of Scheme works at State level. The SLDRC held only three meetings (November 2009, March 2011 and August 2011) since its inception (June 2009). The Company invited (May 2012 to May 2013) tenders for Part-B works and awarded (January 2013 to June 2014) works involving ₹556.73 crore under the Scheme. SLDRC, however, did not hold a single meeting during the said period. This indicated ineffectiveness of SLDRC in upholding the objectives of its formation. The Company also did not effectively

monitor the project implementation through regular review of the periodic work progress reports as submitted by the contractors.

2.1 Introduction

Ministry of Power (MoP), Government of India (GoI) launched the Re-structured Accelerated Power Development and Reforms Programme (R-APDRP scheme/Scheme) in December 2008. The basic objective of the Scheme was to reduce Aggregate Technical and Commercial (AT&C) losses in the power distribution sector of the Country. Assam Power Distribution Company Limited (Company) took up (November 2009) the Scheme in Assam with a completion schedule of five years (November 2014). The projects taken up under the Scheme, however, remained incomplete despite periodic time extensions granted to the Company.

GoI, in the meantime, launched (December 2014) the 'Integrated Power Development Scheme' (IPDS), which subsumed the existing R-APDRP scheme. The IPDS guidelines envisaged continuation of R-APDRP scheme as a separate component of IPDS, based on the existing Scheme guidelines. The IPDS further intended to attain the R-APDRP scheme targets through carry forward of the Scheme outlay already approved before launching (December 2014) of IPDS.

Both the schemes of GoI (IPDS and R-APDRP scheme) aimed at reducing the AT&C losses by providing financial assistance against capital expenditure incurred by the power distribution sector on creation of power infrastructure in urban areas. The coverage of R-APDRP scheme in Assam included the urban areas with population of more than 10,000. The IPDS scheme, however, extended the coverage to urban areas having population of more than 5,000.

The R-APDRP scheme was to be in two parts viz. Part-A and Part-B. Part-A of the Scheme involved preparation of baseline data of consumers and metering of distribution transformers and feeders. Besides, Part-A of the Scheme also involved commissioning of Geographic Information System (GIS) mapping as well as Supervisory Control and Data Acquisition (SCADA) system for real-time monitoring and control of distribution network system. Part-B of the Scheme envisaged strengthening sub-transmission and distribution network, replacement of electromagnetic energy meters with tamper proof electronic meters *etc.*

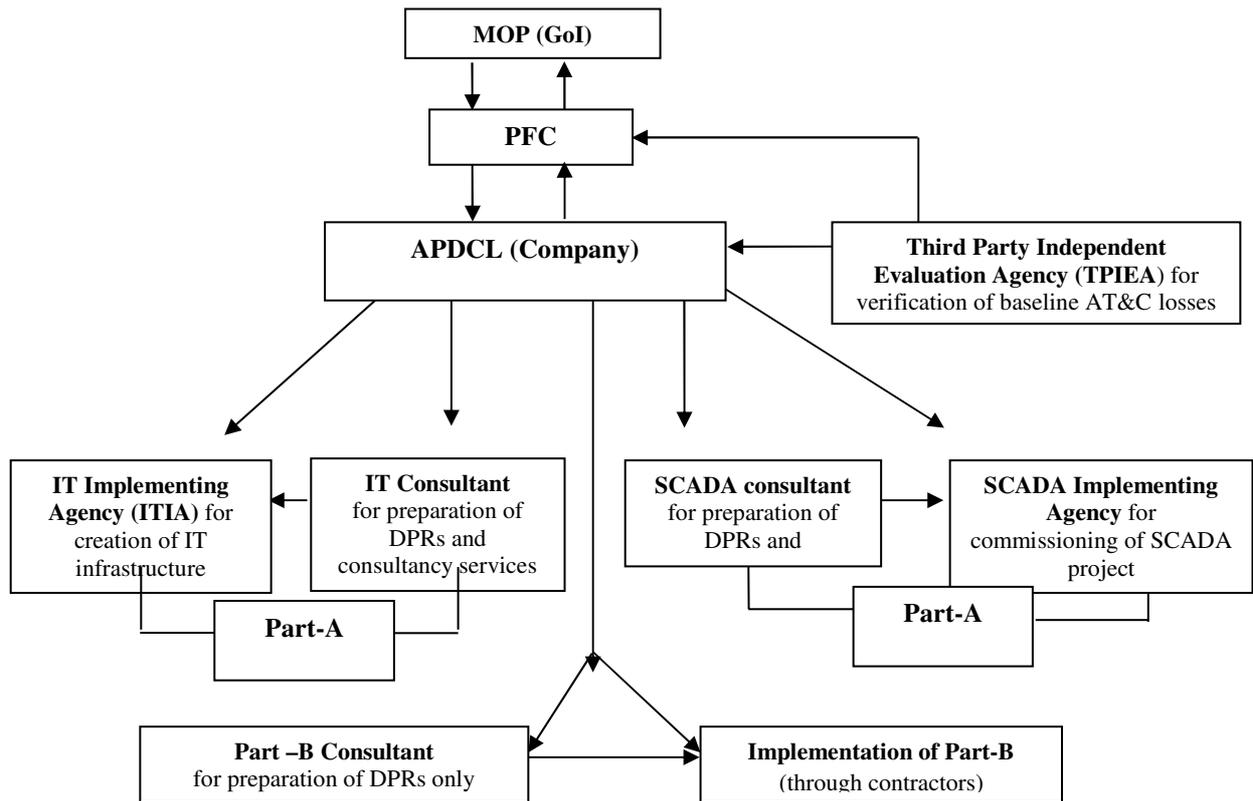
In Assam, the Scheme involved 67 project areas each for Part-A (excluding SCADA project) and Part-B projects. The SCADA project was implemented only in one project area (Guwahati). The Company declared (November 2013 to March 2016) the

Part-A works in all the 67 project areas as ‘Go-live²’, although the SCADA project was incomplete (September 2017). The Company had taken up (November 2011) implementation of Part-B project works in all the 67 areas selected for Part-A works. The Company, however, could complete the same only in 47 project areas (September 2017). GoI extended (July 2017) the scheduled period for completion of pending works under the Scheme upto March 2018.

2.2 Organisational Structure

MoP, GoI appointed the Power Finance Corporation (PFC) as the nodal agency to operationalise the Scheme. MoP, GoI selected the Company as the implementing agency in the State of Assam. The Company, MoP (GoI), PFC and the Government of Assam (GoA) accordingly entered (25 February 2010) into a quadripartite agreement. The graphical presentation of the arrangements adopted for implementation of the Scheme has been depicted in the *Chart-2.1* below.

Chart -2.1



² As per System Requirement Specification of PFC, the Company can declare a project area as ‘Go-live’ once it has placed the IT mechanism for online data transfer for facilitating the energy audit without any human intervention.

2.3 Scope of Audit

The present Audit Report covered the performance of the Company in implementation of the R-APDRP component of the IPDS during the period from April 2009 to March 2017. Out of total 67 project areas covered in Assam under the R-APDRP Scheme, Audit selected 17 project areas³ for detailed examination in the PA. The sample selection for both Part-A and Part-B works was made through statistical sampling⁴ method. As regards the SCADA project, the same was implemented only in Guwahati area, which was also selected for detailed scrutiny in Audit.

2.4 Audit Objectives

The audit objectives of the PA were to assess whether:

- the Company evolved proper planning for effective implementation of the Scheme as per the time schedule;
- the funding for the Scheme was commensurate with the progress of the work and the Company utilised the funds economically and efficiently to ensure financial propriety;
- the Company took up the implementation of the Scheme in a timely manner to achieve the broad objectives of economy, efficiency and effectiveness; and
- proper and adequate monitoring mechanism was in place to ensure timely implementation of the Scheme and achievement of Scheme objectives.

2.5 Audit Criteria

Audit derived the criteria for achieving stated audit objectives from the following sources:

- IPDS/R-APDRP Scheme guidelines issued by MoP;
- Directives issued by the PFC from time to time;
- Minutes of Steering Committee⁵, Distribution Reforms Committee⁶, *etc*;
- Detailed Project Reports (DPRs), work orders ;

³ Dibrugarh, Guwahati, Jorhat, Digboi, Tinsukia, Mangaldoi, Silchar, Nalbari, Nagaon, Dhubri, Morigaon, Badarpur, Gauripur, Jagiroad, Rangia, Barpeta Road and Bokajan.

⁴ Probability Proportional to Size and Without Replacement (PPSWOR) method.

⁵ It is the central committee for sanctioning and monitoring of the project consisting of 13 members, headed by the Secretary (Power), GoI.

⁶ Distribution Reforms Committee is a state level monitoring committee consisting of seven members headed by the Chief Secretary of the State.

- Directives issued by the Central Vigilance Commission (CVC); and
- Relevant rules and established procedures of the Company.

2.6 Audit Methodology

The Audit methodology adopted for attaining the audit objectives involved explaining the scope, audit objectives, audit criteria *etc.* to the top management of the Company in the Entry Conference (24 April 2017). It also involved analysis of data/records with reference to the audit criteria, raising of audit queries and issuing of the draft PA to the GoA/Company for comments.

Audit also discussed (5 September 2017) the draft PA with the representatives of the GoA/Company in the Exit Conference. Audit has also taken into consideration the formal replies received (28 September 2017) from the Company. Audit also considered the view expressed by the representatives of the GoA/Company in the Exit conference while finalising the Audit Report. The formal replies of the GoA to the draft PA, however, had not been received (November 2017).

Acknowledgement

The Indian Audit and Accounts Department acknowledges the cooperation of the Department of Power (Electricity), Government of Assam and Assam Power Distribution Company Limited for providing necessary information and records during the course of the audit.

Audit Findings

2.7 Planning

Proper planning is vital and an essential aspect for successful implementation of any scheme and achievement of the scheme objectives. The R-APDRP scheme guidelines also impressed upon the need to formulate a comprehensive plan by the State concerned for the overall successful implementation of the Scheme. Further, an effective planning for Scheme implementation also required thoroughness in preparation of Detailed Project Reports (DPRs) based on detailed survey and comprehensive feasibility study of selected sites/locations. The deficiencies noticed at planning stage of the Scheme implementation have been discussed below.

2.7.1 Absence of comprehensive plan

As per the approved R-APDRP scheme guidelines, the Company was to prepare a comprehensive plan for Part-A (including SCADA) and Part-B projects. It included proper identification of project location after conducting thorough feasibility study,

survey works. The comprehensive plan for Scheme works should also ensure synchronisation of various project activities for successful and timely implementation of the Scheme. Audit observed that the Company did not prepare any comprehensive plan for implementation of Scheme works in the State. This had resulted in preparation of defective DPRs, tardy implementation and non-completion of the project even after eight years of the sanction (November 2009) of the Scheme.

The Management stated (September 2017) that it had not prepared formal comprehensive plan, though it took steps for strict monitoring to execute the Scheme timely. It further added that delay in completion of the Scheme works was not solely attributable to non-preparation of comprehensive plan. It maintained that the delay was also due to numerous other reasons like natural calamities, frequent bandhs, Right of Way (RoW) problems, *etc.*

The reply was not acceptable, as the Management in support of their reply did not provide the details of the projects affected due to the cited reasons. Further, the Company should have addressed the pre-planning issues like RoW problems at the planning stage of the projects itself.

Due to absence of comprehensive plan, there was lack of proper foresight at planning stage. This had led to mid-course corrections in design, work specifications, change in project sites on account of defective DPRs. The project works were delayed and involved additional expenditure as discussed in the *paragraphs 2.7.2 and 2.9.3.1*.

An appropriate system needs to be devised for preparing a comprehensive plan based on detailed feasibility study for implementation of any project within the prescribed time and cost.

2.7.2 Preparation of the DPRs

An effective planning for Scheme implementation required thoroughness in preparation of Detailed Project Reports (DPRs) based on detailed survey and comprehensive feasibility study of selected sites/locations. The Company appointed (June 2010) National Power Training Institute (NPTI) as Consultant for preparation of DPRs for Part-B projects. Audit observed that there was lack of adequate feasibility study and survey works in preparation of DPRs. This led to deficiencies in selection of sites, finalisation of equipment specification, *etc.* as discussed in subsequent paragraphs.

2.7.2.1 Selection of sites

Examination of records relating to 17 selected project areas revealed that total 11 new substations were proposed in 7 project areas. Audit observed that out of these 11 substations, the work relating to 2 sub-stations under Guwahati project area could not

be taken up due to non-availability of land. The work in respect of another substation in the same project area could also not be commenced due to change in the building specification necessitated based on the soil conditions. **Table 2.1** depicts the status of these substations.

Table 2.1

Proposed site of sub-station in the DPR	Proposed site of sub-station at the time of work order	Present status
BC Complex, Guwahati	Meghmallar Apartment, Guwahati	The Company changed the original site (BC Complex, Guwahati) during issue of work order without any recorded reason. The alternative site so selected (Meghmallar Apartment) was again changed to Geetanagar site as the area was low-lying. The Company acquired Geetanagar site in July 2015. GoA, however, accorded clearance in December 2016. The work was ongoing (September 2017).
Ganeshpara, Katabari	Jorabat	The Company changed the original site during issue of work order without any recorded reason. Construction work at new site (Jorabat) had initially started but stopped due to land dispute.
Ulubari substation	Nehru Stadium	The Company changed the original site during issue of work order without any recorded reason. Construction work at new site had initially started. The Company, however, stopped the work pending approval for the change in building specification as per the soil condition.

As seen from the instances detailed in **Table 2.1**, the Company changed the original locations of the substations during issue of work orders. This indicated unsuitability and deficiency in selection of project sites. In the first case mentioned above, the Company had changed the location twice during the actual execution of project. The Company also could not start the project works in the changed locations because of one reason or the other. The cases discussed above were indicative of the fact that the Company did not carry out proper feasibility study and survey works before selection of the project sites. This resulted in preparation of faulty DPRs, which led to significant delays in completion of the works.

The Management stated (September 2017) that the works of the sub-stations were delayed due to the reasons attributable to the civil authorities, *viz.*, delay/non-handing over of required land for the purpose.

The reply was not tenable as the original locations proposed in the DPRs were changed without any recorded reasons. Further, the Company should have finalised the project locations after ensuring their availability from the Civil Authorities to avoid any future complications.

2.7.2.2 Non-preparedness of sites

The Company issued (June 2014) work orders to T&T Projects Limited (TTPL) for installation of 24 Automatic Power Factor Controllers⁷ (APFC). TTPL was to install the APFCs in equal number of 10 MVA power transformers in the sub-stations under Guwahati project area. During installation of these APFCs, TTPL requisitioned some additional materials, which were beyond the scope of the DPR. TTPL, accordingly, asked (November 2015) the Company for approval of the additional material. The Company had taken a period of one year in approving (November 2016) the said additional requirement. TTPL could install only 9 APFCs so far despite approval of additional materials. TTPL could not, however, install the balance 15 APFCs as the Company did not make available the requisite sites for installation of these APFCs (September 2017).

The Management did not offer any comment on the issue.

2.7.2.3 Selection of equipment specification

(i) The DPR for Haflong project area envisaged installation of 11 KV line on Pre-Stressed Cement Concrete (PSC) poles. During execution, the Company found (September 2014) that transportation of heavy weight PSC poles to the project site was not feasible because of the hilly terrain. The Company accordingly, had to change the specification of the poles to lightweight steel tubular poles. The lightweight steel tubular poles, however, involved an additional cost of ₹ 80.64 lakh. Audit noticed that the Company took an unreasonable period of six months⁸ in taking decision on the issue. This correspondingly delayed the execution of the project. Change in the specification of poles at execution stage indicated that the Company prepared the DPR for the project without considering the actual site conditions and other ground realities.

The Management accepted (September 2017) the facts and stated that it would adjust the excess expenditure incurred against the total outlay of Part-B project.

The reply of the Company was not acceptable in view of the fact that the PFC sanctioned the funding of each project area separately. As such, there was no

⁷ It is a device installed in the power transformers to improve the power factor. Higher power factor leads to low currents thereby reducing the energy loss in the distribution system

⁸ From 30 September 2014 to 9 April 2015

provision for adjustment of excess expenditure of one project area with the savings of other project areas.

(ii) The Company awarded (January 2013) the work of construction of 8 Km of 33 KV line to Win Power Infra Pvt. Limited (Contractor) at ₹ 1.59 crore (Supply: ₹ 1.56 crore and Erection: ₹ 0.03 crore) in Naharkatia project area. The Contractor supplied (March-June 2014) materials worth ₹ 1.48 crore to execute the work of 33 KV line. The Company, after erection of 68 out of 176 poles realised (November 2014) that the actual requirement of the transmission line was 13 Km instead of 8 Km as proposed in the DPR. As a result, the Company had to short-close the work since the 8 Km line as envisaged in the DPR would not serve any purpose. Audit observed that the Company could not utilise materials worth ₹ 1.48 crore supplied by the Contractor so far (September 2017). The said material was lying idle for more than three years after procurement (March to June 2014).

The Management stated (September 2017) that while finalising the DPR, Power Finance Corporation (PFC), nodal agency for the Scheme, had curtailed some parameters of works. During execution, the Company found the quantum of works was inadequate to supply power.

The reply was not factually correct as PFC approved the project based on the proposal for construction of 8 Km 33 KV line as per the DPR submitted by the Company.

(iii) The DPR of SCADA project provided for installation of 225 Feeder Remote Terminal Unit⁹ (FRTU) in the SCADA compatible equipment, namely, autoreclosers and sectionalisers. The Company placed (October 2012) work order to the Contractor for commissioning of SCADA system. The work order also envisaged installation of 225 FRTUs at a cost of ₹ 2 crore. The Company subsequently, realised that the autoreclosers and sectionalisers had in-built FRTUs. The Company accordingly, cancelled (November 2012) the supply order of 225 FRTUs included in the work order placed with the Contractor. Audit observed that there was an excess provision for FRTUs worth ₹ 2 crore in the DPR of SCADA project. This indicated incorrect assessment of materials at the time of preparation of DPR.

The DPR for SCADA project further envisaged for installation of 36 Remote Terminal Units (RTUs¹⁰). Audit noticed that 2 out of these 36 RTUs proposed to be installed in the SCADA network system had to be re-located due to reasons¹¹

⁹ FRTUs are equipment used to control on field SCADA equipment from SCADA control centre.

¹⁰ RTUs are equipment installed at sub-stations to control and monitor them from SCADA control centre.

¹¹ Reasons included sub-station falling outside the project area, non-availability of control room and heavy water logging at sub-stations during rainy season, etc.

attributable to defective site selection. This indicated deficiencies in preparation of the DPR for the project.

The Management accepted (September 2017) the observation stating that it excluded the FRTUs as it found at a later stage that the SCADA-compatible equipment had built-in FRTUs. The Management, however, did not offer any comments on re-location of RTUs.

The fact remains that the Company while preparing the DPRs did not properly assess specification and actual requirement of various components to be used in the project works.

(iv) DPRs of Part-B project works envisaged installation of 62 RMUs¹² under the SCADA project on Reinforced Cement Concrete (RCC) foundation. During actual execution, the Company observed (January 2016) that the locations proposed for installation of 30 out of 62 RMUs were not suitable for RCC foundation due to space constraints. To overcome the problem, the Company decided (April 2016) to use steel tubular/joist poles and clamps for installation of the RMUs. Similarly, the DPR for Part-B project (Guwahati project area) envisaged installation of autoreclosers and sectionalisers¹³ on PSC poles. The Company, however, had to install the above equipment on steel tubular/joist poles as PSC poles were found unsuitable to carry the load of the equipment.

There was no provision in the DPRs for the additional materials required for completing the above works. The Company, therefore, had no other option but to incur an additional expenditure of ₹ 2.51 crore to execute the works.

The Management stated (September 2017) that it prepared the DPRs after considering the standard norms. During actual execution, it changed/increased the scope of work due to space constraints and soil condition.

The reply was not tenable as the Company should have analysed the above aspects at planning stage before finalisation of DPRs. The corrective course of action taken at execution stage confirmed the defects in preparation of DPR.

As observed from the above instances, even though the Company assigned work of preparation of DPRs to professional agencies, DPRs were deficient in several aspects. This indicated failure of the Company to oversee the work of the said agencies in preparation of DPRs and finalisation of the project sites as well as specification and requirement of equipment. This contributed towards delays in project completion, blocking of fund in idle-stock and additional expenditure. The said deficiencies in

¹² RMUs are equipment installed in the distribution network under the SCADA system to provide alternate source of power in case of default in a network system.

¹³ Autoreclosers and sectionalisers act as a breaker to isolate faulty network.

DPRs had a cascading effect on attaining the Scheme objectives relating to reduction in AT&C loss to the prescribed level.

2.8 Funding

Table 2.2 depicts the funding mechanism for implementation of the Scheme works as prescribed under the Scheme guidelines.

Table 2.2

Scheme work	Prescribed funding	Conditions of funding	Condition for conversion of loan into grant
Part-A and SCADA	100 per cent as loan by GoI.	30 per cent upfront, 60 per cent based on progress/utilisation and balance 10 per cent after utilisation of earlier tranches.	The entire loan was to be converted into grant on successful completion of the project and verification by independent agency of MoP/PFC within three years from the date of sanction (November 2009).
Part-B	90 per cent by GoI as loan. Counterpart funding of balance 10 per cent by GoA as loan.	30 per cent upfront, 50 per cent based on progress/utilisation and balance 10 per cent after utilisation of earlier tranches.	90 per cent GoI loan was to be converted into grant in five equal tranches, starting one year after the year of establishment of the baseline data system and verification by the independent agency of PFC. This conversion of GoI loan into grant was subject to the condition that the project was completed within the schedule time and the Company achieved the AT&C loss target of 15 per cent on a sustainable basis for a period of 5 years in the project area concerned.

2.8.1 Sanction, Release and Utilisation of Funds

GoI launched (December 2014) the Integrated Power Development Scheme (IPDS) with an approved outlay aggregating ₹ 582 crore for the State of Assam. As against this, the GoI sanctioned (March 2016) ₹ 494.70 crore and released ₹ 49.76 crore as on September 2017. The actual implementation of the IPDS was, however, pending to be commenced (September 2017).

As mentioned under *paragraph 2.1 supra*, the IPDS subsumed the existing R-APDRP scheme as a separate component of IPDS allowing carry forward of the Scheme outlay already approved under the R-APDRP scheme. The R-APDRP scheme guidelines envisaged completion of the project by November 2014. GoI subsequently extended the completion schedule upto March 2018.

Table 2.3 depicts the details of sanction, release and utilisation of the R-APDRP scheme funds during the period from 2009 to 2017.

Table 2.3

Funds	R-APDRP Scheme			Total
	PART-A	PART-B	SCADA	
	(67 project areas)		One project area	
	₹ in crore			
Approved cost	215.31	644.05	21.82	881.18
GoI funding				
Sanction	173.78 ¹⁴	579.65	21.82	775.25
Release	117.94	359.16	12.74	489.84
Utilisation	84.99	336.55	9.27	430.81
GoA funding				
Counter-part fund only for Part B project	Not applicable	55.67 ¹⁵	Not applicable	55.67

As could be seen from **Table 2.3**, GoI approved ₹ 881.18 crore for the R-APDRP scheme. GoI thereafter sanctioned (November 2009 to February 2012) an amount aggregating ₹ 775.25 crore towards its share of the Scheme funding. Against this, GoI released ₹ 489.84 crore so far. As of September 2017, the Company utilised ₹ 430.81 crore (88 per cent) on Scheme works. In addition, the Company also utilised the counterpart funding aggregating ₹ 55.67 crore provided by GoA towards Part-B project works. During examination of records of the Company, Audit noticed that the Company had irregularly inflated the cost estimates against execution of the Scheme works by ₹ 89.62 crore. This had correspondingly inflated the overall approved cost of the Scheme as discussed in succeeding paragraphs:

(i) Overestimation of project cost

As against the total cost of ₹ 644.05 crore approved for Part-B works in all 67 project areas, the Company issued work orders at a contract value of ₹ 556.73 crore. To determine the project cost under the Scheme, the Company included additional 15

¹⁴ The difference of ₹ 41.53 crore between approved and sanction cost is the FMS charges for four years to be arranged by the Company.

¹⁵ Released and utilized.

per cent on the cost estimates prepared as per the Schedule of Rate (SoR). This addition was made on the plea to keep a cushion for absorbing the cost escalation. As a result, the total project cost was correspondingly overestimated by ₹ 77.87 crore due to preparation of inflated cost estimates. The Company, however, did not seek approval of GoI/PFC for enhancing the project cost estimates. Audit noticed that despite this irregular enhancement in the cost estimates, the Company had assured the GoI/PFC regarding preparation of the cost estimates under the DPRs as per the SoR 2010-11.

The Management stated (September 2017) that it was a general norm to include additional amount in the estimates to offset any escalation in future. It also stated that it prepared the estimates based on the SoR 2010-11 and mentioned the same in the DPRs too.

The reply was not acceptable, as the Company had irregularly escalated the cost estimates of Part-B projects by 15 *per cent* over SoR 2010-11 without prior approval of GoI/PFC. This fact was also not disclosed in the DPRs, which was not justified.

(ii) *Inclusion of departmental overhead in violation of guidelines*

The Scheme guidelines barred the Company from including departmental overhead charges (such as, supervision charges) in the project costs. The Company however, prepared the project cost for Part-B works by including the additional supervision charges component of 15 *per cent*. The Company thus, irregularly inflated the project cost by ₹ 11.75 crore in violation of the Scheme guidelines.

The Management stated (September 2017) that while tendering for the works, it excluded supervision charges considered in preparation of DPRs.

The reply was not acceptable, as the Company had gone on record in the DPRs stating that there was no departmental overhead component included in the cost estimates. This was a misrepresentation of fact, and GoI had sanctioned the project cost based on cost estimates proposed under the DPR.

2.8.1.1 *Other irregularities*

(i) As per CVC guidelines, the contractors should not get advances against erection portion of contract. Audit however, observed that the Company had released (October 2013 to August 2015) ₹ 3.03 crore as 10 *per cent* interest free mobilisation advance on erection portion of the contracts under Part-B project works.

The Management stated (September 2017) that it extended the mobilisation advance to the contractors as per terms and conditions of letter of award (LoA).

The reply was not tenable as the provisions of the LoA in this regard were not in line with the CVC guidelines. The CVC guidelines, although, not mandatory for the Company, were a good practice.

(ii) As per *clause 8.2* of the bid document for the Part-B project works, the Company was required to release payment against the supply bills of the contractors after retaining 30 *per cent* of bill amount. The Company was to release the said bill amount of 30 *per cent* only after successful erection and commissioning of the materials supplied by the contractors.

Examination of the records of the Company revealed that as of August 2016, Part-B works in respect of 52 out of total 67 project areas were ongoing. Audit observed that the Company had irregularly released (July 2015 to August 2016) 85 *per cent* (₹ 42.36 crore) of the retention money of 30 *per cent* (₹ 68.51 crore) in respect of these 52 ongoing project areas. Release of the retention money by the Company relating to the ongoing projects was in contravention of the conditions of the bid document.

The Management stated (September 2017) that it released the retention money on completion of erection works in most of the project areas.

The reply was not acceptable as the Company irregularly released retention money in 52 project areas where erection and commissioning of works were not complete on the date of release of payment.

2.9 Project Implementation

2.9.1 Implementation of Part-A projects

2.9.1.1 Selection of the Information Technology consultant

The Company appointed (July 2009) Feedback Ventures Limited as Information Technology (IT) Consultant (ITC) for Part-A project, at a cost of ₹ 99.27 lakh for a period of three years (upto July 2012). The scope of work of ITC included preparation of DPR and providing consultancy services for project implementation including appointment of IT Implementing Agency (ITIA). As per the Scheme guidelines, the Company was required to appoint the ITC within 15 to 25 days from the date (February 2009) of the Request for proposal/tender. Audit observed that the Company had taken 140 days in selecting (July 2009) the ITC after issuing (February 2009) of the Request for proposal/tender. The delay was attributable mainly to delay in constitution (17 April 2009) of bid evaluation committee and subsequent time consumed in bid evaluation (June 2009).

The Management stated (September 2017) that period prescribed for completion of selection process of ITC was too short as all the empanelled bidders were outside the State.

The reply was not acceptable as the delays occurred after receipt of bids (20 March 2009). The fact is that the committee took (April-June 2009) excessive time in evaluation and finalisation of the bids, which was within the control of the Company.

An appropriate system needs to be developed by the Company to ensure that the bidding process for appointment of project implementing agencies is completed within the prescribed time.

2.9.1.2 Execution of work by the ITIA

The Company appointed (July 2011) Tata Consultancy Services (TCS) as ITIA at a cost of ₹ 215.32 crore for Part-A project works with a completion schedule of 18 months (January 2013). As mentioned in ***paragraph 2.9.1.1 supra***, the Company had appointed the ITC in July 2009. The Company, however, had taken unreasonably high period of two years in appointing the ITIA after the appointment of ITC. Audit further observed that the Company took an excessive period of 14 months in handing over (September 2012) the Data Centre (DC)¹⁶ building to ITIA after their appointment (July 2011). This had cascading effects on completion of IT related works under Part-A project. Audit observed that the ITIA could complete the works in March 2016 after 39 months of the scheduled date (January 2013). As a result, the Company declared (November 2013-March 2016) the above Part-A works as 'Go-live' after a delay ranging from 10 to 39 months from the scheduled date (January 2013).

The Management stated (September 2017) that delay in handing over of the DC building to ITIA was due to delay in completion of DC infrastructure by the contractor (Emerson Limited). The delay was attributable to several unavoidable factors like flood, heavy rain, *etc.*

The reply was not tenable in view of the fact that the Company awarded (February 2012) the construction work of DC infrastructure to the contractor (Emerson Limited) after a time gap of seven months from the date of appointment (July 2011) of the ITIA. Absence of proper synchronisation between the ITIA work and award of construction work of DC infrastructure caused delay in handing over the DC building to ITIA, which was avoidable.

¹⁶ To carry out core technical works like installation and commissioning of computer servers, network devices and deployment of centralised IT software, the handing over of Data Centre (DC) building to the ITIA within a reasonable time was a pre-requisite.

2.9.1.3 Additional expenditure due to time extension

As referred to in *paragraph 2.9.1.1 supra*, the Company appointed (July 2009) the ITC at ₹ 99.27 lakh for a period of three years (upto July 2012) in respect of Part-A project works. Audit however, observed that due to non-completion of Part-A project by the ITIA within the schedule time, the Company extended the period of engagement of ITC by 47 months (upto June 2016). The Company incurred an additional amount of ₹ 47 lakh at the rate of ₹ 1 lakh per month due to delay in completion of Part-A project. The Company would have to further extend the work tenure of the ITC in view of the required support of ITC to Third Party Independent Evaluation Agency (TPIEA) for independent evaluation of project works. Audit observed that GoI had not appointed the TPIEA for evaluation of project works so far (September 2017).

The Management stated (September 2017) that the job of the ITC was to provide services throughout the pendency of the project. It also extended the project completion period from time to time from three years to seven and half years.

The fact however, remained that the Company had to extend the contract period with the ITC mainly because of abnormal time gap of two years in appointment (July 2011) of ITIA after the appointment (July 2009) of the ITC, which was controllable on the part of the Company.

2.9.1.4 Mapping of assets and network changes

To perform energy audit and accounting of project areas, it was essential that the project areas had up-to-date Geographic Information System (GIS) mapping of asset and consumer information in GIS repository. MoP, GoI had also emphasised on the need of up-to-date GIS mapping of assets and consumers information for successful and timely implementation of the Scheme. Audit observed that the Company had completed (July–December 2011) the work of GIS mapping of assets and consumers information only once. The Company thereafter, had never updated the system for changes in assets and consumer base in the projects areas. As a result, the GIS maps of assets and consumers information prepared for the project areas become out-dated. In December 2016, the Company decided to undertake the work of regular updation of the GIS maps of assets and consumers. There was no further progress on records in this regard (September 2017).

The Management stated (September 2017) that the work for selection of vendor for updation of database of assets and networks was under process.

The fact remained that in the absence of regular updation of the information/data, the GIS maps of assets/consumers prepared initially did not serve the intended purpose and had become redundant.

2.9.1.5 Outcome of Part-A projects

An important milestone in the execution of the Part-A project was declaration of a project area as 'Go-live'. As per the System Requirement Specification (SRS)¹⁷ document, the Company could declare a project area as 'Go-live' once the IT mechanism had been successfully placed for online capturing and transfer of data to facilitate energy audit without any human intervention. The Company had already declared (November 2013 to March 2016) all the 67 Part-A projects as 'Go-live'. Audit had analysed the meter status reports for the month of March to May 2017 in the 17 selected project areas. Based on the analysis, Audit observed that the status of the online data communication of the meters in the selected 17 project areas was poor. **Annexure-4** depicts the status of online communication of meters during the period from March–May 2017 in respect of 17 areas selected out of 67 project areas. As could be seen from **Annexure-4**, out of 17 selected project areas, the Company could achieve 100 *per cent* online communication only in six project areas. The six project areas achieving 100 *per cent* online communication included one area for HT consumer meters and five project areas for Feeder meters. In the case of distribution transformer (DTR) meters the Company could not achieve 100 *per cent* online communication in any of the project areas.

The non-availability of online data was mainly attributable to defective meters and modems, defective Data Concentrating Units, failure/non-availability of General Packet Radio Service (GPRS) connectivity *etc.* In the absence of online data availability, the Company either obtained the data manually from the field offices or fed into the system on an estimated basis. Thus, despite declaring the Part-A projects to be 'Go-live', the Company could not achieve the basic Scheme objective of online data communication without human intervention for energy accounting and auditing. As a result, the accuracy and credibility of the AT&C loss data in different project areas also remained questionable as discussed in **paragraph 2.9.3.6**.

The Management stated (September 2017) that it had taken steps to achieve 100 *per cent* data communication from all types of meters. It was through rectification/replacement of defective meters, modems and persuasion with Bharat Sanchar Nigam Limited to improve GPRS coverage.

The fact, however, remained that the Company could not avoid human intervention in data communication even after lapse of more than one year after declaration (November 2013 to March 2016) of the projects as 'Go-live'. This defeated the main objective of the Scheme.

¹⁷ PFC prepared the System Requirement Specification document that stipulated the technical specification required under the R-APDRP scheme.

2.9.2 Implementation of SCADA project

The Company had taken up the implementation of Supervisory Control and Data Acquisition (SCADA) and Distribution Management System (DMS) project in the Guwahati project area. The SCADA/DMS project aimed to establish real time monitoring and control of the distribution network systems for achieving load balancing, improving voltage profile, minimising loss, *etc.* As against the original scheduled date of completion (March 2014), the execution of the project was still ongoing (September 2017). The following deficiencies were, observed in implementation of the project:

2.9.2.1 Appointment of SCADA Consultant

As per the Scheme guidelines, the Company was to appoint SCADA consultant within 15-25 days of issuing the tender. The Company, however, took 115 days (delay of 90 days) in appointment of the Consultant (TATA Consulting Engineers Limited) for the project. Audit observed that the Company had taken excessive time (62 days) in evaluation of technical and financial bids for appointment of Consultant. This had correspondingly delayed the appointment of the Consultant. Audit further observed that the Consultant had also delayed the work of preparation and submission of DPR of the project by 164 days beyond the period of 75 days prescribed under the LoA.

The Management stated (September 2017) that the delay in bid evaluation was due to time taken by Tender Purchase Committee (TPC) for discussion on several matters with the various wings of the Company. As regards the delay in submission of DPR, the Company stated that the Consultant delayed the process because of several reasons. The said reasons included resolving service tax related issues that existed in the LoA, delay in placement of coordinator by the Consultant, besides several revisions in the DPR before final submission.

The reply was not acceptable as the Company needed to adhere to the timeline prescribed for appointment of Consultant under the Scheme guidelines. As regards delay in submission of DPR by the Consultant, the Company should have monitored and co-ordinated with the Consultant to resolve the issues within reasonable time to avoid the said delays.

2.9.2.2 Appointment of SCADA Implementing Agency

The Company awarded (October 2012) the work of implementation of SCADA to Chemtrols Industries Limited (CIL) at a contract value of ₹ 20.12 crore. The completion period was 18 months (by March 2014) from the issue of LoI (September 2012). Despite several time extensions given by the Company, CIL failed to complete

the work and requested (March 2017) for further extension upto March 2018. In this connection, Audit observed the following discrepancies:

(a) Delay in completion of award process: As per the Scheme guidelines, the Company was to complete the process of appointment of SCADA implementing agency (SIA) within three months (by January 2012) of sanction (October 2011) of the project. Audit observed that the Company had taken excessive time (152 days) in issuing of tender after sanction (October 2011) of the project. Further, the SCADA consultant had also taken unreasonably long period (82 days) in evaluation of technical and financial bids. As a result, the Company had taken almost one year to appoint (October 2012) CIL as SIA after sanction (October 2011) of the project.

The Management stated (September 2017) that the delay in issue of tender was due to revisions in the Request for Proposal (RFP) document by the Consultant based on the field requirements. The Company also had to obtain clarification of bidders on certain issues relating to their financial offer. This also caused delay in completion of technical and financial bid evaluation.

The reply was not acceptable as the time consumed (almost one year) by the Company in appointment of SIA was unreasonably high compared to the time prescribed (3 months) under the Scheme guidelines. The Company should have taken all necessary steps to complete the award process within the prescribed timeline.

(b) Supply and installation of SCADA equipment: As per the project implementation schedule, CIL was to supply 36 Remote Terminal Units (RTUs) within August 2013. CIL was also required to install the said RTUs in equal numbers of 33/11 KV sub-stations by September 2013. As against this, CIL delivered 25 RTUs in the month of November 2013 and the balance 11 RTUs in March 2014 after the delays of three months and seven months respectively. Audit further observed that out of 36 RTUs scheduled for installation by September 2013, CIL could install only 29 RTUs so far (September 2017). CIL could not install the balance 7 RTUs due to non-readiness of the related sub-stations.

The project implementation schedule further provided for supply of 62 Feeder Remote Terminal Units (FRTUs) based on the field requirements of the project works latest by September 2013. CIL supplied (July 2016) the said FRTUs after a delay of more than 34 months of the scheduled date.

The Management stated (September 2017) that despite persuasion, CIL delayed supply of equipment. It further stated that delay in installation of the equipment was also due to non-readiness of sites, problem in land acquisition *etc.*

The reply was not tenable as the Company should have addressed the site/land related issues at planning stage before issue of work order.

(c) Commissioning of SCADA equipment and data communication with SCADA system: Out of 29 RTUs installed at various sub-stations as mentioned above, CIL could commission only 20 RTUs so far (September 2017). CIL, however, could not commission the remaining 9 RTUs installed (December 2014 to April 2016) at various sub-stations so far (September 2017). The delay in commissioning of the RTUs was mainly attributable to non-integration with the SCADA system, delay in testing of RTUs installed and changes in specification of cable/control panel.

Audit further observed that out of 20 RTUs commissioned (upto September 2017), data communication system was present in 18 RTUs. Out of said 18 RTUs, only 13 RTUs were operational through SCADA control centre. In case of FRTUs, out of 62 FRTUs supplied (July 2016) by CIL at project site as mentioned in the previous subparagraph, it could install only 51 FRTUs so far (September 2017). Further, out of said 51 FRTUs, CIL could commission only 8 FRTUs till date (September 2017). Only in the case of one FRTU, communication was present with the SCADA system so far (September 2017).

The Management stated (September 2017) that problems in communication with the SCADA control centre was due to problem of integration with the autoreclosers of the sub-stations and Ring Main Units (RMUs), change of control panel of the sub-stations, issues of upgradation of protocol and firmware in sub-stations, etc. The Company further stated that the integration activities were picking up and the Company would complete the same soon.

The fact, however, remained that the Company could not resolve the issue of integration of the SCADA equipment to reap the benefit of online control and monitoring of the distribution network system through SCADA control centre.

(d) Equipment with expired warranty: Audit observed that out of the 36 RTUs supplied by CIL till June 2017, 25 RTUs valuing ₹ 1.52 crore were delivered in the month of November 2013. Besides, the communication systems valuing ₹ 2.13 crore were also received at project site in the month of November 2013. These equipment valuing ₹ 3.65 crore had already outrun the warranty period¹⁸ (May 2017) even though the SCADA project was pending for completion (September 2017).

The Management stated (September 2017) that the equipment installed in sub-station were in live operation. It also claimed that there was a provision of Facility Management Services (FMS) for four years after the warranty period.

The reply was not acceptable as FMS was a paid service and covered only minor repair and maintenance costs. The major rectification/replacement of the equipment

¹⁸ 36 months from the date of commissioning or 42 months from the date of delivery at Company's store whichever was earlier as per LoA.

without extra cost in case of any defect/damage was covered under the equipment warranty, which had already expired.

(e) **Release of liquidated damages:** The Company deducted (September 2014) an amount of ₹ 71.88 lakh from the supply bills of CIL towards liquidated damages (LD). The Company had recovered the said LD due to delay in supply of materials by CIL and consequent delay in completion of the project within the scheduled period (March 2014). Audit observed that the Company had extended (October 2014) the scheduled completion period of the project up to March 2015 based on the request (September 2014) of CIL. The Company had accordingly released (December 2014) the said LD amount (₹ 71.88 lakh) to CIL. By releasing the LD, the Company provided a tacit assent to CIL for the delays caused in fulfilling their contractual obligations. Audit further noticed that the delays in supply of material by CIL had contributed towards delay (42 months) in completion of the project from the scheduled date (March 2014). The project was still ongoing (September 2017).

The Management stated (September 2017) that it released the LD in view of the extension given by PFC in the project completion date.

The reply was not justified, as the extension given by PFC did not intend releasing the LD imposed on the Contractor (CIL) for their default in supply.

(f) **Non-completion of Distribution Management System (DMS):** DMS was one of the vital functional aspects of the SCADA system. It facilitated online control and monitoring of various on-field distribution network equipment with the SCADA system. In January 2016, CIL requested the Company to provide up-to-date GIS data for developing the DMS software. The Company in turn, requested (November 2016) ITIA¹⁹ to provide the GIS data for developing the DMS software after 10 months of the request received (January 2016) from CIL. The ITIA did not respond to the request of the Company. The Company then decided (January 2017) to use Single Line Diagram (SLD) of the network system to operate the on-field SCADA compatible equipment. The Company did not take any significant action in this regard so far (September 2017). Meanwhile, the ITIA refused (April 2017) to take up the work of GIS survey of the SCADA network. Audit noticed that the availability of GIS data was essential for developing the DMS software. The Company, however, had omitted to include this aspect in the work scope of CIL/ITIA while issuing their work orders. As a result, the Company could not integrate various on-field SCADA compatible equipment (*i.e.* RMUs, autoreclosers and sectionalisers) with the SCADA system pending completion of DMS (September 2017).

¹⁹ IT implementing agency (Tata Consultancy Services) for Part-A project works as discussed under *paragraph 2.9.1.2 supra*.

The Management stated (September 2017) that it used SLD to integrate on-field SCADA equipment in one sub-station. For other sub-stations, it would complete the same within a month.

The reply confirmed failure of the Company to address the issue of GIS mapping for DMS software while firming up the work scope of CIL and ITIA. The use of SLD was only an alternative course of action adopted by the Company.

2.9.2.3 Outcome of SCADA project

The SCADA project was taken up with the aim to develop online communication of SCADA equipment with the SCADA control centre. The Company, however, could not integrate the equipment with the SCADA system to achieve this basic objective of the Scheme as discussed under *paragraph 2.9.2.2 (c) and (f) supra*. Out of 20 sub-stations commissioned under the project, only 13 sub-stations were operational through SCADA control centre. CIL could not generate various control and monitoring reports.²⁰ This was mainly due to failure of the Company to develop the Distribution Management System (DMS), which was one of the vital functional aspects of SCADA system. The Company, thus, generated its own Feeder Interruption Reports, System Average Interruption Duration Index and System Average Interruption Frequency Index reports based on the alarm data²¹ of the SCADA application. There were discrepancies and inconsistencies in the alarm data/alarm reports. It also resulted in generation of erroneous reports defeating the purpose of report application of the SCADA system.

The basic objective of the SCADA system was to have on-line control and monitoring over the distribution network system without any human intervention. The Company could not achieve this objective due to inaccurate/non-generation of MIS reports.

2.9.3 Implementation of Part-B projects

The Part-B projects consisted of works relating to strengthening of distribution system so as to attain the AT&C loss at a level of 15 *per cent* on sustainable basis. The Part-B project works were originally scheduled for completion within three years (by November 2014) from the date of sanction (November 2011) of the project. GoI granted several extensions from time to time (upto March 2018) as Part-B works lagged behind under the 67 project areas from the original scheduled period. Despite these extensions, the Company could complete the Part-B projects only in 47 out of 67 project areas so far. The Part-B projects in remaining 20 project areas were

²⁰ Interruption reports, Daily Alarm reports, Energy substation reports, Energy Accounting reports, etc.

²¹ Data generated by the SCADA system in case of any fault in the SCADA network.

ongoing (September 2017). Audit observed the following deficiencies in the implementation of the Part-B projects by the Company.

2.9.3.1 Delay in completion of the project

GoI released (November 2011 and September 2012) upfront advance of ₹ 193.21 crore for the Part-B projects. The Company issued (May 2012 to May 2013) tenders in the form of packages²² for works relating to strengthening of distribution system²³. **Table 2.4** depicts the considerable delays at various stages in implementation of the works in 17 selected project areas.

Table 2.4

Stages	Scheduled time	Actual time taken
Issue of tender after release of fund	Not prescribed.	177 to 369 days.
From tender to award of work.	180 days from date of tender (Bid validity).	In 2 project areas, the Company awarded work with minimum delays (5 days). In balance 15 project areas, the Company awarded work with a delay of 71 to 282 days beyond the prescribed period of 180 days.
Completion of project works after award of works.	540 days from the date of work order.	The Company completed the works in 9 project areas with delay of 227 to 603 days beyond the prescribed period (540 days). The Company could not complete the works in 8 projects areas even after delay of 664 to 1,157 days beyond the prescribed period (540 days).

Examination of records of the Company revealed that the Company had taken excessive time in evaluation of bids as well as finalisation of project sites. Besides, the Company had also taken unreasonably long time in resolving the issues relating to approval of additional materials, non-availability of project site²⁴ and Right of Way (RoW) problems. This had caused avoidable delays at various stages of project execution as detailed in **Table 2.4**.

The Management stated (September 2017) that delay in issuing tenders was due to changes made in the scope of work after actual field survey of project site by the consultant. It further stated that as some bidders challenged the findings of the Tender

²² Group of individual project areas falling within the same Electrical Circle.

²³ Except consumer metering for which the Company issued separate NIT.

²⁴ Guwahati and Jorhat Project area.

Purchase Committee (TPC), there was delay in award of work. The Company also mentioned that there was delay in handing over of the land by the district authorities, which was beyond its control. The Company further attributed the slow progress of work to the hindrances caused on account of natural calamities.

The reply was not tenable as the bidders challenged the findings of the TPC in the case of Guwahati project area only. Further, the contention regarding change in estimates based on actual requirement confirmed the fact of deficiencies in the DPRs. The plea regarding the delay due to land related issues is also not acceptable, as the Company should have resolved the same at the planning stage. Further, the Company did not provide any documentary evidence in support of its claim regarding slow progress of work due to uncontrollable factors like natural calamities.

2.9.3.2 Undue benefit to the contractors

As per the bid document, the Company was to compare the financial bids based on lump-sum prices quoted by the bidders for the entire scope of work. The Company accordingly, issued (January 2013) the work order for strengthening and up-gradation of sub-stations and distribution works of 7 project areas²⁵ in favour of Win Power Infra Pvt. Limited (WPIL). The work order was issued at a lump sum value of ₹ 23.97 crore for the entire work. Examination of the records of the Company revealed that while submitting its bids, WPIL had quoted 'zero' rates for some of the work components²⁶. During evaluation, the Company considered the highest rate amongst the participating bidders against the said 'zero' rate items of work as per bid evaluation guidelines. The Company awarded the work to WPIL at lump sum quoted value as per the guidelines.

During execution of work, the WPIL requested (June 2014) the Company to allow the lowest rate amongst the participating bidders against the 'zero' rate items. The Company placed (December 2014) the matter before the Board of Directors (BoD). The BoD decided to supply the items to WPIL from Company's own stock or by procuring the items departmentally. The Company accordingly, supplied (May 2015/December 2015) one power transformer and five distribution transformers costing ₹ 44.84 lakh and ₹ 11.57 lakh respectively to WPIL for the project works at the cost of the Company.

²⁵ Nagaon, Morigaon, Dhing, Doboka, Jagiroad, Hojai and Lanka under Nagaon Electrical Circle.

²⁶ One 10 MVA power transformer in Jagiroad and two 100 KVA and five 250 KVA DTRs in Lanka.

The Company's decision to supply materials to WPIL at its own cost was not justifiable as it awarded the work on lump-sum price for the entire work. This resulted in extension of undue benefit to WPIL to the tune of ₹ 56.41 lakh.

The Management stated (September 2017) that it did not give any undue benefit to WPIL, as it did not allow it (WPIL) to procure the materials. The Company instead, procured the materials at its own for utilising in the project work.

The fact however, remained that the Company procured the materials, which the contractor was to supply and install at its own cost as per the lump sum contract.

2.9.3.3 Use of sub-standard materials

a. The Company awarded (December 2013) the work of supply of 33 distribution transformers (DTRs) for Kanch Electrical Circle to Necon Power & Infra Limited (Contractor) at ₹ 1.17 crore. As per the terms of the supply order, the Contractor was to supply the equipment manufactured by the Company approved manufacturers only. Audit observed that the DTRs supplied (August 2014) by the Contractor were not manufactured by a Company approved manufacturer. During inspection of the equipment after delivery, the Company noticed (August 2014) serious defects in 15 DTRs, which the Contractor rectified. After installation of these DTRs, the Company again noticed (October 2016) seepages of transformer oil from the body of the DTRs during another random check. The Contractor again rectified the defects. Thus, the Company had to face frequent defects in the DTRs due to procurement of sub-standard equipment from a manufacturer not approved by the Company.

The Management stated (September 2017) that the manufacturer (*viz.*, North East Electrical Industry) of the DTRs supplied was an approved vendor of the Company.

The reply was not tenable as the Company inducted (April 2015) the aforesaid manufacturer in the approved list of manufacturers after the supply (August 2014) of the DTRs.

b. The Company awarded (January 2013) the work of strengthening and improvement of distribution network system under Nagaon project area to WPIL at a contract value of ₹ 9.11 crore. The above works included erection of 3,376 PSC poles for construction of 11KV and LT lines as per the specification indicated in the work order. The officials²⁷ from Assam Power Generation Corporation Limited (another State owned power sector company) carried out inspections of 1,000 PSC poles on two occasions (September 2013 and November 2013). As per both the inspection reports, the deflection of the PSC poles was higher than the required specification.

²⁷ Assistant General Manager (Hydro) and Deputy General Manager (Hydro) of Assam Power Generation Corporation Limited.

The said technical deficiency in PSC poles was due to lower grade of concrete used in the manufacturing of the poles. Both the inspection reports declared the PSC poles as unfit for use in the project. The Company requested (November 2013) for expert opinion from Chief General Manager, Hydro (CGM) of Assam Power Generation Corporation Limited to consider the findings of the above reports. The Company also requested the CGM for further inspection, if necessary, before taking a final view on the use of the PSC poles. The CGM recommended (March 2014) that the poles used in the project could withstand the specified design load based on the specifications mentioned in the reports. Audit, however, observed that while giving the above recommendations, CGM had neither provided any technical justification in support nor carried out further inspection on the poles. Based on the recommendations of CGM, the Company issued (March 2014) dispatch clearance for PSC poles even though the said recommendations were not consistent with the findings of previous two inspection reports. The Contractor installed the said PSC poles in the project areas without conducting any fresh test, which was a compromise with the safety aspects as well as quality of work.

The Management (September 2017) stated that the poles were fit for use after inspection activities carried out by the contractor at the premises of the manufacturer on advice of CGM (Hydro).

The reply was not tenable, as the Company had decided to install the PSC poles without any further analysis/inspection completely ignoring the contradiction between CGM recommendations and previous inspection reports. It thereby exposes the project area to the risk of any mishap due to installation of the said poles.

2.9.3.4 Consumer Metering

A. Ordinary Consumer Meter

The Company assessed (August 2011) a requirement of 1,67,855 meters (1,56,780 single-phase and 11,075 three-phase) for installation under the scheme as of August 2011. As against this, the Company purchased 2,29,314 meters (2,11,856 single-phase and 17,458 three-phase) till July 2014. As on 31 March 2015, the Company, however, could install only 1,78,487 meters (1,68,610 single-phase and 9,877 three-phase). Audit observed the deficiencies in procurement/installation of meters as discussed below:

i. Unjustified evaluation of bids: The Company received bids for procurement of consumer meters (single-phase and three-phase) for two zones²⁸. During evaluation (April 2013) of bids, the Company observed that the rates quoted by Secure Meters Limited (L¹ bidder) were unreasonably high. Hence, the Company

²⁸ Guwahati Zone (Zone-I) and Central Assam Zone (Zone -III)

asked the L¹ bidder to submit a revised offer. On evaluation of revised bid, Tender Purchase Committed (TPC) recommended (July 2013) to award the work to L¹ bidder for Zone-I and negotiate with them for Zone-III. The L¹ bidder, meanwhile, offered (August 2013) a discount of ₹ 35.21 *per* single-phase meters for Zone-III. The Company accepted (August 2013) the same and issued (October 2013) work orders accordingly.

Audit observed that the unit cost quoted by the bidder for the single-phase meters was same for Zone-I and Zone-III. The Company however, obtained the benefit of negotiation in Zone-III only. As such, the Company lost an opportunity to avail the benefit of ₹ 26.38 lakh²⁹ for Zone-I by placing supply order on L¹ bidder without negotiation.

The Management stated (September 2017) that the percentage variation in Zone-I against the revised price of single-phase meters offered for Zone-III was considerably lower due to large share of three-phase meters in Zone-I. Hence, the Company awarded the order for supply of single-phase meters for Zone-I to L¹ bidder at their originally quoted price.

The reply was not acceptable as the Company while awarding the work to the same supplier failed to consider uniformity in the unit price of the meters of same specification for Zone-I and Zone-III, which was not justified.

ii. Excess procurement of meters: As mentioned under *paragraph 2.9.3.4.A supra*, the Company assessed (August 2011) the requirement of 1,56,780 single-phase and 11,075 three-phase meters for 63 project areas. The Company took up (October 2013) the work of installation of 2,11,856 single-phase and 17,458 three-phase meters in 67 project areas. The Company had been installing the meters through two Contractors³⁰ at a cost of ₹ 62.29 crore. As per the work order, the Contractors were required to complete the work by July 2014. The Company, however, had extended the schedule date of completion of work to March 2015. The details of the meters to be installed and actually installed by the Contractors upto the extended date of work completion (March 2015) have been shown in **Table 2.5**.

²⁹ 74,919 meters x ₹ 35.21 = ₹ 26,37,898 (No. of meters supplied under Zone-I X Discount availed against supplies to Zone-III per single-phase meter)

³⁰ Secure Meters Limited and Genus Power Infrastructures Limited.

Table 2.5

Name of contractor	Scope of work		Installed		Unutilised	
	Single-phase	Three-phase	Single-phase	Three-phase	Single-phase	Three-Phase
SML	1,11,575	14,310	75,990	7,953	35,585	6,357
Genus	1,00,281	3,148	92,620	1,924	7,661	1,224
Total	2,11,856	17,458	1,68,610	9,877	43,246	7,581

As seen from **Table 2.5**, even after expiry of extended time period of 9 months (March 2015) from the original scheduled date of completion (July 2014), the contractors installed only 1,68,610 single-phase meters (80 *per cent*) and 9,877 three-phase meters (57 *per cent*). The supplier transferred (April 2015 and June 2015) the balance 50,827 meters (43,246 single-phase and 7,581 three-phase) to the Company's stores. The details of utilisation of the same was not on record.

Non-installation of 50,827 meters valuing ₹ 13.18 crore was attributable to non-availability of the database of defective and old electro-mechanical meters, resistance of consumers in replacement of meters and shortage of manpower.

The Management stated (September 2017) that it could not install the meters due to resistance from the consumers.

The reply was not acceptable, as the Company should have enforced the provisions of supply code, which included disconnection of supply to the consumers, who opposed to replace the meters. Further, the Company while adopting a new policy decision, needs to ensure the feasibility of its implementation through a well devised system so as to overcome all hindrances.

B. Prepaid meters

The Company procured (March-April 2015 and November 2015) 24,212 meters³¹ of required specification from two suppliers³² at an aggregate cost of ₹ 16.65 crore³³. The Company released payment of ₹ 12.87 crore after completion (March to November 2015) of the entire supply by the suppliers. Audit observed the following deficiencies in the procurement of meters:

- During installation of meters, the Company noticed that the prepaid meters procured did not conform to the technical specifications mentioned in the NIT. The meters procured did not have the features relating to recording of power factor (PF)

³¹ 21,212 single-phase and 3,000 three-phase

³² SML and GPIL

³³ SML: ₹ 12.87 crore (17,000 single-phase and 2,000 three-phase) and GPIL: ₹ 3.78 crore (4,212 single-phase and 1,000 three-phase).

reading and Maximum Demand (MD). The said features of meters were mandatory as per the applicable provisions of the tariff issued by Assam Electricity Regulatory Commission. Considering the deficiencies, the Company had to restrict (August 2016) the work of meter installation to selected categories³⁴ of consumers only. As a result, the Company could install 2,385 meters (1,369 single-phase and 1,016 three-phase) to the said categories of consumers. The balance 21,827 meters (19,843 single phase and 1,984 three-phase) valuing ₹ 14.60 crore remained unutilized (September 2017). Audit noticed that there was no document on record to confirm conducting of inspection of meters by the Company before accepting the delivery. This was essential to verify that the specification of meters procured was as per the requirement. As a result, the investment of ₹ 14.60 crore towards cost of the unutilised meters remained blocked besides frustrating the Scheme objectives.

The Management stated (September 2017) that it was pursuing with the suppliers to incorporate the provisions for PF reading, MD, *etc.* in the meters.

The reply of the Company confirmed that the meters accepted by it did not conform to the technical specifications prescribed under the Scheme. The expenditure incurred on these meters, thus, has rendered to be infructuous.

The Company should put in place appropriate system/mechanism to ensure that the specification of materials procured conform to the prescribed technical requirements.

➤ As discussed under previous paragraph, total 21,827 meters procured from two suppliers (SML and GPIL) remained uninstalled as of September 2017. As per the guarantee certificate issued by the SML, the warranty clause was not applicable if the Company stored the meters in unpowered condition for more than two years. Audit observed that out of 21,827 uninstalled meters, 15,657 meters valuing ₹ 9.68 crore were supplied by SML and the same were lying in stores for more than two years. The Company had already lost the opportunity to invoke the benefit of the warranty clause in case of any defect in these meters in the future.

The Management accepted (September 2017) the observation and stated that discussion was going on with SML to provide extended warranty for the balance quantity of meters.

2.9.3.5 SCADA compatible equipment

As per the Scheme, the Part-A project covered the installation of SCADA system in the Guwahati project area. The works relating to installation of SCADA compatible

³⁴ Consumers falling under Jeevan Dhara, Domestic-A&B, Public Lighting and Agriculture categories.

equipment (*viz.* Ring Main Units (RMUs), autoreclosers and sectionalisers) in the substations and feeders at field level was, however, covered under the scope of Part-B project of the Scheme.

The Company awarded (February 2014) the work of installation of SCADA compatible equipment to the Joint Venture (JV) of three firms³⁵ at a lump sum contract value ₹ 23.46 crore. The work was to be completed within 12 months (*viz.*, latest by February 2015). The Company released payments amounting to ₹ 21.50 crore to JV till June 2017. Audit observed the following deficiencies in execution of the work:

A. Award of work

Clause 3.3 of the bid document stipulated that in case a bidder already had work-in-hand in respect of the Company, exceeding three times of the turnover of the bidder, the Company should treat the bid as non-responsive. Audit observed that as on the date of tender (May 2013), the JV had work-in-hand (₹ 216 crore) relating to the Company, which was more than three times of JV's average annual turnover (₹ 68.32 crore) for the last three years (2010 to 2012). The Company, however, did not treat the bid of the JV as non-responsive and irregularly awarded the work to it in contravention of bid provision.

The Management stated (September 2017) that there was no methodology for calculation of work-in-hand of the joint venture in the bid document. Hence, the techno-commercial evaluation committee of the Company had to apply its own methodology for calculating the works-in-hand.

The reply was not acceptable as the methodology adopted by the Company was neither mentioned in the bid document nor discussed in the pre-bid meeting. This indicated absence of transparency in bidding process.

B. Misstatement of fact

As per the terms of contract, the contractor (JV) was to complete the work within 12 months (February 2015) after the award (February 2014). The Company however, extended the scheduled completion period upto March 2016. In the work completion certificate (May 2016), however, the Company stated that the JV had completed the work within the scheduled date (March 2016). The Company on the contrary, while seeking (April 2016) approval for the works relating to additional materials, mentioned about non-commissioning of the equipment for want of additional materials. The Company again asked (April 2016) the contractor to take up and complete the work after the approval of additional materials. In an internal

³⁵ Singhi Cables & Conductors Private Limited, OK Enterprises and Win Power Infra Pvt. Limited.

communication, the Assistant General Manager (AGM) of the Company reported (June 2016) to the Managing Director of the Company regarding completion of 80 *per cent* of installation of SCADA compatible equipment as of June 2016. The contradiction in the facts mentioned above rendered the authenticity of the completion certificate issued (May 2016) by the Company as doubtful.

The Management stated (September 2017) that in the meeting held in June 2016, the AGM discussed about interfacing issue of the equipment which got misquoted in the minutes as installation. The reply confirmed the audit observation as interfacing of the equipment formed part of the project work which was not completed so far (September 2017).

2.9.3.6 Outcome of Part-B projects

The principal objective of the Scheme was restoration of commercial viability of the power distribution sector by substantially bringing down the AT&C losses at the level of 15 *per cent* on sustainable basis. The GoI directly linked the conversion of loan into grant to achieve the targeted level of AT&C loss as discussed in *paragraph 2.8*. The Company thus would not be eligible to get the benefit of conversion of GoI loans into grants in the event of non-achievement of targeted reduction in AT&C loss. In that case, the Company would also have to bear the interest burden on the said portion of loan not converted into grant.

Audit observed that the AT&C loss of the Company in the year 2010-11 (base-year) was 29.91 *per cent*, which had come down to 23.05 *per cent* in 2016-17. The overall position of AT&C loss at the beginning (2010-11) of the project as well as after the completion (2016-17) of the Part-B works in the 47 completed project areas has been given in the *Table 2.6*.

Table 2.6

Range of AT&C Loss (in <i>per cent</i>)	Number of Project areas at the beginning ³⁶ of the project	Number of Project Areas after completion of Part-B project
0-15	0	5
15-30	9	26
30-45	21	13
45-60	14	3
60-75	3	0
Total	47	47

As could be seen from *Table 2.6*, out of the 47 Part-B project areas where the work was complete, the Company could achieve the targeted level of AT&C losses (15 *per*

³⁶ Formation of baseline data

cent) in 5³⁷ project areas only. The Company, however, failed to achieve the targeted AT&C losses in respect of remaining 42 completed project areas.

Audit further observed that in 6 out of 47 completed project areas, the AT&C loss increased from the baseline figure after completion of Part-B project. Scrutiny of two³⁸ out of these six project areas revealed that the rise in AT&C losses were mainly on account of:

- decrease in collection efficiency due to inclusion of rural consumers within these project areas;
- calculation of input energy on estimation basis due to faulty boundary meter at the ring fence points;
- existence of huge number of defective consumer meters/DTR meters and preparation of bills based on estimates; and
- insufficient works taken up under Part-B scheme as compared to actual field requirement.

In view of the position discussed above, there was a possibility of the Company not getting the benefit of conversion of GoI loan into grant due to non-achievement of targeted reduction in AT&C losses.

2.10 Monitoring

Proper and effective monitoring of implementation of scheme was vital to achieve the scheme objectives within the scheduled time. To ensure effective monitoring of scheme works at state-level, the Scheme guidelines stipulated formation of State Level Distribution Reforms Committee (SLDRC) headed by the Chief Secretary of the State. Besides this, the Company was also required to obtain periodical progress reports on regular basis, from the contractors on the execution of works to monitor the implementation of the Scheme. Audit observed the following deficiencies in the monitoring of implementation of the Scheme works:

2.10.1 Monitoring by State Level Distribution Reforms Committee

The GoA formed (June 2009) the SLDRC headed by the Chief Secretary, GoA as per the requirements of the Scheme guidelines. The SLDRC was to recommend the project proposals prepared by the Company to MoP, GoI for their approval. SLDRC was also required to monitor the compliance to the conditionality of the approval during project implementation and monitor the achievement of milestones and targets fixed under the Scheme.

³⁷ Tinsukia, Kokrajhar, Nagaon, Morigaon, Bongaigaon

³⁸ Chapor and Doboka

Audit observed that since its inception (June 2009), SLDRRC held only three meetings (November 2009, March 2011 and August 2011). The Company invited (May 2012 to May 2013) Notices inviting Tenders (NITs) for Part-B project and awarded (January 2013 to June 2014) works involving ₹ 556.73 crore under the Scheme. Audit observed that there was not a single meeting of SLDRRC during the aforesaid period to monitor the tendering process and implementation of the project works under the Scheme.

This indicated ineffectiveness of SLDRRC in upholding the objectives of its formation. It contributed towards various deficiencies in completion of the project works and consequently non-achievement of the Scheme objectives even after eight years of sanction (November 2009) of the Scheme.

The State Government/Company need to devise an appropriate system to ensure effective monitoring of project works through regular meetings of the monitoring committee at prescribed intervals.

2.10.2 Monitoring by the Company

The Company, being the implementing agency, was to monitor the project implementation through regular review of the periodic work progress reports submitted by the contractors. This would facilitate taking timely action in resolving various hurdles in implementation of the project works. As discussed earlier, the Company was deficient in resolving issues relating to selection of project work sites/availability of land, receipt of materials not conforming to specification, problem of integration of SCADA equipment with SCADA system. There were also Right of Way (RoW) issues and resistance of consumers in replacement of meters of prescribed specifications. All these indicated lack of active involvement and effective monitoring of project implementation by the Company.

Conclusion

The prime objective of the Scheme was to bring down the Aggregate Technical & Commercial loss (AT&C loss) to the targeted level of 15 *per cent* on sustainable basis. Audit observed that there was an overall reduction of only 6 *per cent* (from 29 to 23) in the AT&C loss of the Company till 2016-17. Only in 5 out of 47 completed project areas, the AT&C loss was at or below the targeted level. Non-achievement of AT&C loss target was mainly attributable to implementation of the Scheme without any comprehensive plan and preparation of DPRs without adequate survey and field study. This caused delay in selection of sites, change in specification of equipment, requirement of additional material and consequent delay in project completion.

The Company also failed to achieve the desired benefits of IT applications under Part-A project in establishing reliable and automated sustainable systems for collection of online data for energy accounting and auditing. This was due to various controllable factors that included persistence of defective meters and modems, failure or non-availability of GPRS network, absence of regular updation of Geographic Information System (GIS) maps of consumers and assets. The Company also could not harness the benefit of online control and monitoring of distribution network through SCADA system. It was due to tardy implementation of the project coupled with inadequate monitoring.

Recommendation

The Government may consider:

- formulating a comprehensive plan before implementation of any Government scheme;
- carrying out adequate feasibility study and survey work of the site conditions before preparation of Detailed Project Reports while executing future projects;
- resolving the hindrances to complete online data communication for accurate energy accounting;
- addressing deficiencies of the Supervisory Control and Data Acquisition (SCADA) project for effective control and monitoring of distribution network system; and
- strengthening the project monitoring mechanism to ensure effective and timely implementation of the projects.