

Chapter 6

Coal Supply Management

One of the important functions in operating a power station is to ensure uninterrupted supply of coal so that generation loss due to coal shortage does not arise. Coal was required for 'declaration of capacity' (DC) of stations, even though the beneficiaries may not schedule power from the station. The Company operated nine pithead power stations where coal was moved from mine to the power station through the Company's own rail network and wagons called Merry Go Round (MGR) system. In the nine non-pit head stations, coal was transported in wagons from the linked mines to the power station through the Indian Railway network. Imported coal was transported by shipping vessels and upon reaching the ports, coal was shifted to railway rakes for onward transportation to designated stations. Audit reviewed various aspects relating to coal supply management and observed as under:

6.1 Coal stock at stations

Daily coal stock at stations was monitored at Corporate Office level through an online system where stations provided data relating to their daily consumption and stock. Audit noticed that coal stock position was at critical (less than 7 days' requirement considering 90-92 percent PLF) and super-critical (less than 4 days' requirement) levels at various stations during the period 2012-13 to 2015-16, as per details given in table below:

Table-6.1: Details of coal stock below critical and super critical level

(Number of days)

Station Name	2012-13		2013-14		2014-15		2015-16	
	Critical	Super critical	Critical	Super critical	Critical	Super critical	Critical	Super critical
Singrauli	80	83	37	103	-	156	-	-
Rihand	29	79	75	103	24	229	-	-
Unchahar	119	131	17	161	16	153	-	-
Tanda	-	-	79	-	15	117	-	-
Badarpur	123	119	60	38	19	91	-	-
Dadri	19	309	68	209	43	107	-	-
Korba	61	232	11	3	44	146	47	26
Vindhyachal	62	128	26	148	21	195	-	-
Sipat	5	229	10	100	17	227	-	-
Farakka	-	365	68	122	34	84	94	15
Kahalgau	34	331	13	91	17	53	30	76
Talcher Kaniha	24	341	40	322	71	59	-	-
Talcher Thermal	31	8	-	-	-	-	-	-
Barh	-	-	-	-	90	-	51	-
Ramagundam	166	110	39	231	-	57	-	-
Simhadri	26	278	5	330	56	92	20	-
Mouda	-	-	-	-	48	81	-	-

Audit also noticed that domestic coal stock dropped to **zero level** at various stations during 2012-13 to 2014-15 as per details given in **Annexure 6.1**. It can be seen from the above table that during 2012-13, the stock level was at super critical position in seven stations for more than six months. Similar situation prevailed in four stations during 2013-14. There was some improvement in 2014-15 but three stations reported super critical stock levels for more than six months. During 2015-16, the situation improved significantly at all stations except Korba, Farakka and Kahalgaon where coal stock level was super critical for 26 days, 15 days and 76 days respectively.

Ministry stated (November 2016) that coal stock at various stations was closely monitored and the matter was continuously pursued with coal companies, MoP, MoC and Railways at various forums. Ministry added that the actual coal supply was the responsibility of coal companies and the short supply might be due to various reasons including less production from mines or railway constraints etc. Ministry further stated that during negotiations over FSA terms, coal was supplied to NTPC stations under short term MoUs.

The reply needs to be seen against the fact that during 2012-13 and 2013-14, supply of coal to stations was disrupted due to delay in signing of FSA and payment dispute with coal companies. Import of coal also did not significantly mitigate fuel shortage since imported coal could only be blended up to 30 percent. Hence the Company resorted to costly options for procuring domestic coal such as MOU at premium rates, involving higher costs.

6.2 Generation loss due to coal shortage

There were instances of units being taken out of operation or being operated at partial load in view of coal shortage during the period from 2010-11 to 2015-16. Audit noticed that during this period, 11 out of 13 stations covered in audit reported a generation loss of 19546.26 million units of electricity with potential revenue loss of ₹4299.80 crore as indicated in the table below:

Table-6.2:Station-wise generation loss due to coal shortage

Sl. No	Name of station	Total generation loss (million units)	Revenue loss (₹ in crore)
1	Dadri	789.05	275.09
2	Badarpur	321.77	135.46
3	Vallur	2829.04	563.36
4	Mouda	422.27	157.73
5	Rihand	2766.41	432.45
6	Jhajjar	1303.41	530.81
7	Sipat	592.52	95.42
8	Vindyachal	4643.94	762.21
9	Farakka	3308.87	886.30
10	Ramagundum	2105.23	412.05
11	Korba	463.75	48.92
Total		19546.26	4299.80

Audit observed that while the stations suffered generation loss due to coal shortage on the one hand, they paid performance incentive to coal companies for excess supply of coal beyond ACQ on the other. Audit also noticed that the FSA allowed transfer of coal meant for one station to another station, if both stations were wholly owned by the Company. However, this provision of transfer was used sparingly.

Ministry stated (November 2016) that in spite of best efforts, coal shortages were there in the country on some of the occasions due to unavoidable problems in mining, natural calamities, seasonal issues *etc.* Regarding inter-station transfer of coal to address shortages of coal, Ministry stated NTPC has used the provision on many occasions during the period under audit, as per FSA terms.

Though Ministry has stated that provision for inter-station transfer of coal was used to address shortages, the fact remains that the efforts taken by the Company to tide over coal shortages proved inadequate as 11 stations suffered generation loss of 19546.26 million units due to shortage of coal.

6.3 Declaration of capacity of station despite non-availability of coal

Even on days when the coal stock was zero, it was possible for the station to generate power with the help of coal received through railway rakes/MGR system during the day. But any unduly positive presumption regarding coal receipt could lead to a generation default and penalty in the form of Unscheduled Interchange (UI) charges. Four power stations (Dadri Stage I & II, Badarpur, Jhajjar and Mouda) incurred UI charges during the period from 2010-11 to 2015-16 amounting to ₹101.41 crore due to such generation default. Audit observed that 'Local Management Instructions' issued by the stations did not provide specific guidance for capacity declaration of stations so that payment of UI charges could be avoided.

Ministry stated (November 2016) that declaration of capacity is done on daily basis based on different parameters including the availability of coal and added that provisions of the Grid Code were followed and there was no violation of the same.

Since capacity declaration is a key decision taken by stations on a daily basis, NTPC may consider laying down guidelines for the same, especially in view of financial implication of any failure to make available the capacity.

6.4 Storage capacity of coal yards at power stations

As per CERC Tariff Regulations, interest on capital equivalent to fuel charges for 15 days' consumption of coal was allowed as part of fixed charges for pit head stations and 30 days' consumption for non-pithead stations, on normative basis. Details of coal storage capacity of 17 stations was examined by Audit and observed that in six stations, *viz.*, Rihand, Badarpur, Dadri, Korba, Farakka and Kahalgaon, the storage capacity was less than the above norm of 15/30 days' requirement. Shortage in capacity as a percentage of requirement ranged from 2.60 percent (Rihand) to 53.62 percent (Farakka). Further, import of coal by stations warranted earmarking a specific area for storage of imported coal, which in turn, limited the space available for storage of domestic coal.

Ministry stated (November 2016) that imported coal was stored separately in the yard and that any portion of the yard could be earmarked for storing imported coal based on requirement.

The reply is to be viewed against the overall shortage in the storage capacity of coal.

6.5 Storage of domestic coal along with imported coal

As per 'Local Management Instructions' issued by the stations, imported coal was to be stacked separately in identified yard at earmarked stockpiles.

Physical verification of both domestic coal and imported coal kept in coal yards was carried out by the stations at the end of every quarter. Physical verification reports (April 2010 to March 2016) of coal stock were reviewed in Audit and it was observed that domestic and imported coal were stored in the same yard as per details given below:

Table-6.3: Details regarding storage of imported coal in domestic coal yard

Sl. No.	Station	Quarters when imported coal quantity exceeded the storage capacity of imported coal yard		Imported coal in excess of imported coal yard capacity (in %) ³⁰
		No. of quarters	Quarters	
1	Vindychal	4	Q IV (2014-15)	50
			Q I (2015-16)	127
			Q II (2015-16)	73
			Q III (2015-16)	28
2	Mouda	6	Q III (2014-15)	158
			Q IV (2014-15)	121
			Q I (2015-16)	127
			Q II (2015-16)	53
			Q III (2015-16)	61
			Q IV (2015-16)	50
3	Sipat	2	Q 4 (2014-15)	62
			Q I (2015-16)	12
4	Dadri	1	Q II (2013-14)	147
5	Farakka	3	Q I (2011-12)	78
			Q II (2011-12)	6
			Q IV (2013-14)	57

The above instances indicated that domestic and imported coal were stored in the same yard. Audit noticed that at Dadri station, domestic coal constituted 7.50 percent to 61.31 percent of coal kept in the imported coal yard and during the period from April 2014 to September 2014, more than half the coal present in imported coal yard was domestic coal. The deficiencies in proper storage affected the blending ratio, which was an important component

³⁰ $\frac{\text{Imported coal as per physical verification of stock} - \text{Storage capacity of imported coal yard}}{\text{Storage capacity of imported coal yard}} \times 100$

in determining the Energy Charge Rate recovered from consumers.

Ministry stated (November 2016) that imported coal was stored separately in the yard and that any portion of the yard could be earmarked from time to time for storing imported coal based on requirement. Ministry added that it is also possible to stack more than the yard capacity in short run by increasing the height of the stock-piles.

Since domestic coal and imported coal were stored in the same yard, the chances of both types of coal getting mixed in the yard itself even before they were actually blended, was high. In view of the deficiency as pointed out above, the blending ratio declared by the station may not be the actual ones due to mixing of the two types of coal at the yard itself.

6.6 Railway logistics

Nine stations of the Company were rail-fed stations and hence proper railway logistics had an important role in the day to day operation. Pithead stations also utilized railway network for bringing imported, MOU and e-auction coal. Audit observed the following inadequacies in railway logistics:

6.6.1 Payment of demurrage charges

The coal supplied through railway rakes was required to be unloaded within a stipulated period known as 'Free Time', beyond which demurrage was charged by Railways. All the 13 stations selected for audit paid demurrage charges amounting to ₹129.67 crore during the period from 2010-11 to 2015-16.

Table-6.4: Year-wise demurrage paid by power stations

(₹ in crore)

Sl. No.	Name of station	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	Total
1	Barh	0	0	0	0	1.57	3.58	5.15
2	Sipat	1.79	0.26	2.31	0.98	5.91	3.73	14.98
3	Mouda	0	0	0	1.22	6.56	0.26	8.04
4	Rihand	0.26	0.11	0.05	1.11	3.49	0.94	5.96
5	Vindhyachal	0.87	0.50	0.04	5.64	3.96	2.02	13.03
6	Korba	0.05	0.57	0.77	0.47	1.15	1.27	4.28
7	Dadri	1.23	0.98	1.87	3.75	2.41	1.63	11.87
8	Badarpur	1.58	1.39	1.79	3.72	1.15	0.83	10.46
9	Ramagundum	0.92	0.66	0.40	3.66	1.44	0.01	7.09
10	Farakka	3.17	2.63	2.50	8.23	5.35	10.63	32.51
11	Talcher Thermal	0.01	0.01	0.06	0.05	0.02	0.01	0.16
12	Vallur	0	0	0.01	0	0	0	0.01
13	Jhajjar	1.94	2.04	2.96	1.26	3.19	4.74	16.13
Total		11.82	9.15	12.76	30.09	36.20	29.65	129.67

The demurrage had to be paid on account of inefficiencies of the stations in unloading coal from railway rakes.

Ministry stated (November 2016) that all efforts were made to reduce the demurrage but some of the times, it became unavoidable due to reasons beyond the control of the company e.g. bunching of rakes, maximum permissible free time allowed by Indian Railways being

inadequate for long sidings *etc.* Ministry added that demurrage has decreased during 2011-12 and on company-wide basis, demurrage has decreased over the last two years.

The reply is to be viewed against the fact that demurrage was not recoverable from tariff and hence there is a need to avoid payment of demurrage.

6.6.2 Diverted rakes

Indian Railways routinely diverted rakes of coal consigned for one consumer to another, due to congestion on a particular line or route. Even if the rakes were diverted, the bills were required to be cleared by the original consignee as per terms of FSA. The rake which arrived at a station but not originally consigned to it was termed 'diverted in' rake while the rake which was originally consigned to the station but diverted to another consumer was termed 'diverted out' rake. Reconciliation at periodical intervals was carried out in coordination with Railways to make adjustments for 'diverted in' and 'diverted out' rakes. Adjustments in prices were carried out following reconciliation of quantity diverted. Quality of coal diverted was not considered for price adjustments.

Audit noticed that the diversion was not always between power stations of NTPC. In cases where rakes were 'diverted in' or 'diverted out' between stations of NTPC and other companies, there would be an adverse impact on NTPC on account of high GCV coal of NTPC stations being 'diverted out' and low GCV coal of other companies 'diverted in'.

Ministry stated (November 2016) that the matter had been suitably taken up and added that there is 'NIL' diversion of rakes outside the NTPC in last two years.

While noting the response of the Ministry, Audit noticed (from data reported by the power stations) that diversion of rakes to other than NTPC stations persisted at Ramagundam and Jhajjar stations in 2015-16 also.