

BEFORE THE HON'BLE NATIONAL GREEN TRIBUNAL,
Principal Bench, New Delhi
In
Original Application No. 108/2020

In the Matter of: -

News item published in the "Indian Express" dated 01.07.2020 titled "Tamil Nadu Neyveli boiler blast: 6 dead, 17 injured".

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Nazimuddin

(Nazimuddin)

Scientist 'E'

Central Pollution Control Board
Parivesh Bhawan, East Arjun Nagar
Delhi-110032

Place: Delhi

Date: 23.10.2020

**The Independent Report on
“Tamilnadu, Neyveli boiler blast; 6 dead, 17 injured”
in compliance with the Order of
Hon’ble NATIONAL GREEN TRIBUNAL,
Principal Bench, New Delhi
in The Matter of OA No: 108/2020**



OCTOBER, 2020

**Independent Committee
constituted in compliance with the Order of
Hon’ble NATIONAL GREEN TRIBUNAL,
Principal Bench, New Delhi
in the matter of OA No: 108/2020**

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The Independent Report
On “Tamilnadu, Neyveli boiler blast; 6 dead, 17 injured”
in compliance with the Order of
Hon’ble NATIONAL GREEN TRIBUNAL,
Principal Bench, New Delhi
in The Matter of OA No: 108/2020

1. BACKGROUND

A suo moto case was taken up by Hon’ble National Green Tribunal, Principal Bench, New Delhi (NGT) based on a news item titled “Tamilnadu, Neyveli boiler blast; 6 dead, 17 injured” and the proceedings in this matter were initiated. Advance notice was issued to Central Pollution Control Board (CPCB), Tamilnadu Pollution Control Board (TNPCB), District Magistrate, Cuddalore District, Cuddalore and the Director of Industrial Safety and Health Department (DISH), Tamilnadu and M/s. Neyveli Lignite Corporation India Limited (NLCIL), Neyveli, Cuddalore District, Tamilnadu with a direction to submit a report. After reviewing the reports submitted by the above mentioned departments, Hon’ble NGT is of the view that independent verification of facts is necessary and observed that the industry is liable to pay interim compensation pending final assessment, . The amount of interim compensation may be disbursed by transfer to the bank accounts of the heirs of the deceased and injured. Passed an Order, constituting an independent committee to visit the site, ascertain facts taking into account the version of the industry and other stake holders and the circumstances and give an independent report within three months of time by email in the form of searchable PDF / OCR support PDF and not in the form of image of PDF. A copy of the report be uploaded on the website of CPCB for comments of any affected party.

Further Hon'ble NGT has ordered Central Pollution Control Board be the nodal agency for compliance and the committee will be at liberty to associate any other individual expert / institution.

2. CONSTITUTION OF INDEPENDENT COMMITTEE

In the matter of OA no.: 108/2020 concerned with fire accident occurred on 1st July, 2020 at Thermal Power Station - II of M/S Neyveli Lignite Corporation India Limited (NLCIL), Neyveli, Cuddalore District, Tamilnadu, Hon'ble National Green Tribunal, Principal Bench, New Delhi (NGT) constituted an independent Committee comprising of

- ❖ Central Pollution Control Board (CPCB)
- ❖ Tamilnadu Pollution Control Board (TNPCB)
- ❖ District Magistrate, Cuddalore District, Cuddalore
- ❖ National Environmental Engineering Research Institute (NEERI) and
- ❖ Indian Institute of Technology – Madras, Chennai, (IIT-M)

vide order dated 8th July 2020. Further passed an Order that the committee shall visit the site, ascertain facts taking into account the version of the industry and other stake holders and the circumstances and give an independent report within three months with certain terms of references.

In compliance with the Hon'ble NGT order dated 8th July 2020, nominations were invited from all the above mentioned departments / Institutions by the nodal agency ie., CPCB vide letter no.: CPCB/RDC/NGT108(2020)/NLC/20-21/283-286 dated 14th July, 2020.

Nominations were received from the above mentioned department except from IIT-M. IIT-M recuse themselves stating that they are already in another committee constituted by M/s. NLCIL, Neyveli to investigate the same accident on behalf of NLCIL and in view of possible conflict of interest (A1).

As an alternate to IIT-M, nomination was invited from The Director General, Directorate of Factory Advice Service & Labour Institutes, Mumbai (DFASLI) and received the nomination accordingly.

Based on the nominations received from the respective department/institution, Central Pollution Control Board, constituted an independent committee (A2) with the following members to assess the matter and submit an independent report within three months before Hon'ble NGT, Principal Bench, New Delhi.

1.	Shri. Chandrasekhar Sakhamuri, I.A.S., District Collector and District Magistrate, Cuddalore District, Tamilnadu
2.	Dr. M. Thirunavoukkarasu, Senior Principal Scientist and Head, CSIR-NEERI, Chennai Zonal Centre, Chennai, Tamilnadu
3.	Shri. K. Elankumaran, Joint Chief Environmental Engineer, TNPCB, Trichy
4.	Shri. G.P. Nijlingappa, Director (Safety), Regional Labour Institute, Chennai
5.	Shri S. Karthikeyan, Scientist –C, CPCB, RD Chennai – Nodal officer

The following officers are invited as expert during the visit of committee to the industry:

Shri. R. Rajkumar, Scientist – D, CPCB, RD Chennai

Shri. T.A. Daniel Sagayaraj, Deputy Director of Boilers, Trichy

Shri. R. Ravichandran, Joint Director, DISH, Tamilnadu

3. TERMS OF REFERENCE OF THE COMMITTEE

To visit the site, ascertain facts taking into account the version of the industrial unit and other stake holders and the circumstances and give an independent report on the following:

- a. The sequence of events;
- b. Causes of failure and persons and authorities responsible therefore;
- c. The compliance of norms laid down in Technical Guidance Manual for Thermal Power Plants;
- d. Compliance with statutory safety norms including hazard risk management;
- e. Extent of damage of life, human and non-human; public health; and environment including water, soil, air;
- f. Steps to be taken for compensation of victims and restitution of the damaged property and environment and the cost involved;
- g. Remedial measures to prevent recurrence;
- h. Any other incidental or allied issues found relevant

The independent report to be prepared within three months for e-filing. The independent report be uploaded in the website of CPCB for the comments of the public. The report should be in form of searchable PDF format.

4. MEETING OF INDEPENDENT COMMITTEE:

An introductory meeting of the independent committee was held on 02-09-2020 (AN) through video conference on account of national lock down due to the ongoing pandemic situation. The agenda of the first meeting is placed at (A3). The meeting was chaired by Shri. Chandrasekhar Sakhamuri, IAS, District Collector, Cuddalore district. The nodal officer explained the procedures to be

followed and stressed the significance of time line. Shri. S. Pandarasivan, GM (Operation and Maintenance) gave a presentation about the accident. The committee members deliberated the terms of references of independent committee made by Hon'ble NGT and the issues involved therein. The minutes of the first meeting is placed at (A4). The Gist of the meeting is:

- ❖ Finalized the date for the visit of the industry
- ❖ Discussed the methodology to be adopted for the execution of the work
- ❖ Discussed the time line proposed and finalized the same for the progress of the report preparation.

5. VISIT OF INDEPENDENT COMMITTEE:

In compliance with the Order of Hon'ble NGT, the independent committee visited the site on 9th and 10th September, 2020 along with the following officials:

Shri. R. Rajkumar, Scientist – D, CPCB, RD Chennai

Shri. T.A. Daniel Sagayaraj, Deputy Director of Boilers, Trichy

Shri. R. Ravichandran, Joint Director, DISH, Tamilnadu

During the visit, an opportunity was given to the industry to present their views on the issue. On behalf of M/s. NLC India Limited, Shri. S. Pandarasivan, General Manager (Operation and Planning) presented the case and show cased the requisite documents and records to the committee.



In the similar fashion an opportunity was given to the victims to air their views on the accident and grievances.

The Committee examined the incident report, report of Internal Committee, external expert committee & Chemical & Explosives specialist committee, all the documents, records available, analyzed the information gathered, verified all the facts and also held detailed deliberations on the issue. A detailed examination was done at the accident site with and without the victims & eyewitness, and the industry premises. Interacted with the officials available in the industry covering all aspects of the accident and subsequent events. The information presented in the report is based on perusal of various documents and records, inspection of site & accident spot and the statement given by Executives, Officers, employees and victims.

6. BACKGROUND OF THE INDUSTRY

The industry M/s. NLC India Limited is located in village Ammeri, Neyveli, Viruthachalam taluk, Cuddalore district, Tamilnadu. The Geo coordinates are 11°33'12" N and 79°26'31" E. It is a Public Sector Undertakings with GoI share 79.2% and others 20.8% under the administrative control of Ministry of Coal. The industry was incorporated on 14-11-1956 under the Companies Act, 1956 and Navratna status was given in April 2011. The core business is diversified and integrated Lignite, Coal mining, Power generation, Power trading and caters the power supply to the entire southern states of the country. 11,918 persons are employed. It has many units namely TS-I, TS-I Expansion, TS-II, TS-II Expansion, New Neyveli Thermal Power Plant (NNTPP), Mine-I, Mine-IA & Mine-II with the following capacity.

Mining	Capacity, MTPA
Mine - I	10.5
Mine – II	15.0
Mine - IA	3.0
Total Mining	28.5

Thermal Power station	Capacity, MW
TS - I	100
TS – II	1470
TS – I Expansion	420
TS – II Expansion	500
NNTPP	500
Total capacity	2990

Solar Power generation – 141 MW

Thermal Power Station – II (TS-II) has seven number of lignite fired units of 210 MW each and thus total capacity of the plant is 1470 MW. TS-II was commissioned in two stages from 1986 to 1993. Unit no.: 1 to 3 constitutes the first stage was designed by M/s. Energie Verfahrense Technik (EVT), Germany and erected & supplied by M/s. Transelektro, Hungary. The second stage, unit 4, 5, 6 & 7 were erected and supplied by M/s. BHEL.

7. STATUTORY STATUS:

The industry is holding the Consent to operate the unit under Water (Prevention and Control of Pollution) Act, 1974 (A5) and Air (Prevention and Control of

Pollution) Act, 1981 (A6) and was valid up to 31st March, 2020 and the same was extended till 30th September, 2020 on the same terms and conditions. Authorization granted under Hazardous and other waste (Management & Transboundary Movement) Rules, 2016 is valid up to 08-02-2021 (A7).

Boiler Acts, 1923: Permission has been granted by the Deputy Director of Boilers, Neyveli to use the boiler under provisions of section 8 of the Boilers Act 1923 (Act V of 1923) and is valid.

Industrial Safety & Health Acts: Industries Act, 1948 (Revised Industries Act, 1987) & Tamilnadu Industries Rules, 1950

8. PROCESS DETAILS

The raw material lignite is received through conveyors from the captive mine. The 400 microns size lignite is reduced to 200 microns in crusher. It is further reduced to 80 microns in Beater wheel mill. The moisture content of lignite is reduced from 50% to 7-8% just before the mill by recycling waste hot flue gas drawn from boiler furnace through re-suction duct. Pulverized lignite is fed into the furnace of the boiler. The DM water is fed into the boiler drum and gets converted into the superheated steam. The superheated steam is admitted into high pressure turbine which is coupled with the generator. The cold reheat steam which is coming from the turbine after the work done is again fed into the boiler furnace through reheater coils gets reheated and the hot reheat steam is admitted in the intermediate turbine and then to low pressure turbine. The generator produces the power of 210 MW per hour.

9. POLLUTION CONTROL NORMS

The flue gas generated from the combustion process is discharged through a stack of suitable height via Electrostatic precipitator (ESP). Online analyzers, for the measurement of Particulate Matter, Sulphur dioxide and Oxides of Nitrogen emission have been provided for continuous monitoring and linked to the server of TNPCB & CPCB.

The effluent from the DM plant is neutralized and discharged through settling tank. The effluent from plant area is treated in a settling tank and discharged into the canal. At the discharge point, Online analyzers for Temperature, pH and Total Suspended Solids have been provided for continuous monitoring and linked to the server of TNPCB & CPCB.



Figure 1 Online data center

Waste water from canteen is treated in Sewage Treatment Plant (STP). STP consists of bar screen, Collection tank, Aeration tank, Clarifier, treated effluent collection tank, sludge drying beds, Chlorine dosing tank, Sand filter and Activated carbon filter. The sludge from sludge drying beds used as manure.

Fly ash in dry condition from ESP is collected in a RCC silo through a pneumatic conduit system. The bottom ash is collected at the bottom of the furnace through slag conveyor. The slag is transported periodically using truck to refill the mined area.

10. SOME SIGNIFICANT FACTS RELATED TO THE ACCIDENT

About the Structures: The boiler is housed in a main steel structure made up of column and girders of box type, hollow one and all are interconnected with each other. Each box type column is 86 m height. Each box type girder is of the dimension $L * B * H = 19.2 * 0.8 * 1.3$ to 3, meters.



Figure 2 Steel structure supporting Boiler

Each girder has two openings of manhole size, facing towards the boiler, round in shape, Diameter – 0.5 m at 0.75 m from the bottom & near to both the ends. Girders are at 15, 32, 44, 54, 67 & 81 meter levels (ML). The floor of each level is made of Mild steel gratings mostly and some places steel plates.



Figure 3 Opening in the girder

Boilers 1, 2 & 3 are same type, designed & erected by Holand company, where all the openings are closed by welding with a plate after completion of erection work. Whereas the boilers from 4 to 7 are also the same design structure but were erected by BHEL. In these case, the openings of the girders are not closed, which are left in open state. The openings might have provided to complete the erection fittings. After erection, the openings supposed to be closed

before handing over the plant. Since the openings are not visible from work area and facing towards the boiler, the openings are not noticed by the industry. Due to the earlier accident only, they came to know these openings. Found that the lignite dust was accumulated over the period of time, right from the commissioning of the plant. The dust is not removed right from the beginning. Otherwise there is no need of opening from operational aspects. That is why the same did not come to the notice of operational staff and no protocol was available for the same. The cross sectional view of structure is in the picture.



Properties of Lignite: Lignite, often referred to as **brown coal**, is a soft, brown, combustible, sedimentary rock formed from naturally compressed peat. It is considered the lowest rank of coal due to its relatively low heat content. It has carbon content around 20-35% percent, high moisture content sometimes as high as 75 percent, an ash content ranging from 6–19 percent and high content of volatile matter. It is used almost exclusively as a fuel for steam-electric power generation. Its high moisture content and susceptibility to spontaneous combustion can cause problems in transportation and storage. Processes which remove water from brown coal reduce the risk of spontaneous combustion to the same level as black coal, increase the calorific value of brown coal to a black_coal equivalent fuel, and significantly reduce the emissions profile of 'densified' brown

coal to a level similar to or better than black coals. However, removing the moisture increases the cost of the final lignite fuel.

Because of its low energy density and typically high moisture content, brown coal is inefficient to transport and is not traded extensively on the world market compared with higher coal grades. It is often burned in power stations near the mines, as in this case.

The composition of lignite is C, H₂, N₂, S & O₂. Lignite contains slightly more hydrogen than the black coal. Lignite is less chemically stable. Therefore, easier to break apart. A small boost from the hydrogen that is already present in the coal initiates combustion and thermal decomposition reactions.

Composition of Lignite as reported by the industry:

Content	Lignite	Lignite dust
Fixed Carbon %	26	30 - 38
Volatile Matter %	47.6	47 – 57
Moisture %	50	7 – 8
Sulphur %	0.75 – 0.85	1.4 – 1.8
Ash %	11	6 – 7
Calorific value	2620 - 2635	Not possible to analyse
Elements %	Carbon - 26 Hydrogen – 2.72 Oxygen – 10.4 Nitrogen – 0.3 Sulphur – 0.89	Carbon – 56 – 62 H – 5 – 5.3 O – 30 – 36 N – 0.5 – 1 S – 1.4 – 1.8

Smoldering: to burn without flame; undergo slow or suppressed combustion.

Water gas generation: When steam is applied on coal or water is applied on coal in red hot condition, water gas will be generated. The constituents of water gas are Carbon monoxide and Hydrogen. Thus the generated CO further reacts with steam / water to generate Hydrogen thus accelerate the generation of Hydrogen. When the concentration of Hydrogen reaches 4% volume by volume in ambient air, it will be exploded automatically without any external energy. The chemical reaction is as follows:



11. ABOUT THE ACCIDENT

In Unit no.:5, heavy slag discharge was observed on 29th June, 2020 throughout the night due to variation in quality of lignite, resulted in frequent tripping of slag conveyor and accumulation of slag inside the slag bath. However it is reported that they continued the intermittent operation.



Figure 4 Slag conveyor and bottom ash collection point

To rectify the defects of bottom ash equipment, the boiler of unit – 5 was hand tripped at 09.31 hours on 30th June, 2020. Both Forced and Induced draught fans were used for forced cooling of the boiler so as to enable the maintenance team to attend the problem at the earliest. Started the various maintenance works at various work places. Out of various maintenance works, removal of lignite dust from girder was also one of them.

Over the period of time, probably right from the beginning of commissioning the plant, the lignite dust leaking from boiler furnace sealing gaps, resuction ducts and pulverized fuel ducts has accumulated within several horizontal legs of the girders entering through their open holes, at different levels particularly at 15ML, 32ML and 44ML girders wherein the boiler furnace zone falls.



Figure 5 Opening at 15 ML girder, where smoldering was found

To remove these accumulated lignite dust from the box type girders, the executive, Shri. G. Shivakumar, Deputy Chief Engineer took ten labours on 01-07-2020 around 7 AM as recommended by the External Committee. First they tried at 15ML girder, since it was hot, they could not approach and the labours noticed the red hot lignite inside the girder at 15 ML front side of the boiler. Then the DCM, who also killed in the accident, gone to the next level of 28 ML floor to approach the opening of the girder at 32 ML. As per the surviving labour statement around five labours were employed at the front and rear sides of boiler girder structure. Both the team was engaged to remove the dust from the girder. The rear team

removed the dust completely and thrown the dust to ground floor (0 ML) along the wall of column through a small gap. Four persons gone inside, removed the dust, passed on to next person standing in sequence at different distance and the person standing outside the girder, received the dust and thrown to ground. After removal of all the dust from the rear side, all the labour came out and taking rest at floor (steel grating) at a distance of twenty to twenty-five feet away from the opening. The DCM asked one person to go inside the girder and to check that all the dust is removed and nothing is left. It is reported that to inspect the same, one person gone inside. The DCE also followed him to check it personally and was approaching to the opening. That time only explosion occurred around 09.53 hours on 01-07-2020.

Six persons were deceased on the spot at 28 ML floor as detailed below:

At the front side

All the five persons working inside and outside of the girder, died on the spot. Two bodies were removed from inside of the girders one each at left and right side. Three bodies were removed from outside of the girders two at left and one from right side.

At the rear side,

One person who gone inside the girder to check, died on the spot.

The Executive, DCE approaching the openings got injured and later expired at the hospital on 03.07.20

Six persons deceased on the spot and seventeen persons injured. One person got injury on left hand joint, treated at NLC Hospital. Sixteen persons got burn injury of various degrees, given first aid at NLC Hospital and referred to

Apollo Hospital, Chennai for further better treatment. Out of sixteen persons admitted, nine more persons died at the hospital later on. Thus deceased are fifteen persons and eight persons got injured in the accident in total. It is reported that the sound was heard in the adjacent plant and since the box type structure is interconnected, the wave transmitted through the way, wherever weak structure is there it finds its way to burst out.

Physical damages (Deface) are found at all levels rather than burnt symptoms. No smoke stain is observed. Even though surface of nearby cable damaged but it is not burnt.



Figure 6 Damage to the girder

It appears that Strong wave of burst with enormous energy has been released. Heavy dust also noticed, visibility gone down and there was panic for 15 minutes. It is reported that fire put off in 35 minutes.

12. COMMITTEE OBSERVATIONS

Committee is of the opinion that the followings are the possible attributes for the explosion:

Attribute One:

- a. The girder is a supporting beam for the main structure and presence of two opening (on both side) is unwarranted, as accumulation of fine

lignite particles inside the girder would have occurred through this opening in a large quantity.

- b. Since the fine lignite particles are easily inflammable and the cleaning operation was carried out when the boiler was not completely cooled, due to which incident occurred.
- c. The committee also observed damages to the structures due to rusting (28 years old plant) and blast.
- d. Accident occurred during the cleaning work. The major reason for cause of the accident may be due to Smoldering. The industry had planned to clean at 15 ML girder initially, due to smoldering/more heat, cleaning could not be carried out and subsequently cleaning was carried out in next higher level. During this activity the heat transfer from lower side (15 ML) to higher side (32 ML) might have occurred. Due to cleaning activities the fine lignite particles would have been in suspension due to manual cleaning, due to more rate of heat transfer between fine particles, might lead to process of Smoldering and caused accident.

Attribute two:

Assumption based on the water gas theory, eyewitness, and statement given by victim: From the second paragraph of incident report submitted by CGM/TPS-II, M/s. NLCIL, it is found that “Cleaning of boiler floor and structures were being carried out with water. At about 09.45 hours suddenly explosion followed by fire occurred.” and the same is confirmed from the last line of inspection report in brief by the Joint Director of Industrial safety and Health, Cuddalore. In view of that, water might have applied on the lignite dust which was in red hot condition at 15 ML, in order to cool down rapidly so that the work (removal of lignite dust) can be started from the girder at 15ML to utilize the idle manpower, who were taking rest

at 28 ML. Thus water gas generated which is nothing but carbon monoxide and Hydrogen. Thus the generated CO further reacts with steam / water to generate Hydrogen thus accelerate the generation of Hydrogen gas. Once the Hydrogen percentage reached 4% (volume by volume) in ambient air, explosion took place without any external energy, with the release of enormous energy and heavy shock waves, which was transmitted throughout the structure and damaged the property near to the openings and killed the persons who were inside the girder and near to the openings and injured the persons and caused damages to the properties who were all in the pathway of waves. The impact felt up to 20-25 feet from the openings.

The followings are the possible attributes for the explosion

- When the water is subjected on red hot coal, it becomes very hot water stream and undergoes most likely coal gasification processes. CO, CO₂, H₂, H₂O, CH₄, Sulfur-oxides, etc. might have formed under these severe conditions.
- Perhaps, the concentration of CO is high due to oxygen depleted conditions inside the girders, confined area.
- CO might have reacted further with the gaseous H₂O stream, which can produce H₂ and CO₂.
- When the H₂ concentration reaches the threshold concentration, explosions might have happened with the release of enormous energy and heavy shock waves, which was transmitted throughout the structure and damaged the properties near to the openings and killed the persons who were inside the girder and near to the openings and injured the persons who were all in the pathway of waves. The impact felt up to 20-25 feet from the openings.

-The presence of iron surface of the girders (as catalyst surface) might have also offered the formation of H₂ and CO (synthesis gas). The rusted iron surface might have offered relatively larger surface area.



13. CONCLUSION AS PER SCOPE OF WORK BASED ON NGT DIRECTION

a. The sequence of events;

The following was the sequence of events revealed by the industry.

- On 30.06.2020 at 9.31 hrs.: Unit-5, stage - II of Thermal Power Station-II (TS-II) was shut down due to heavy slag discharge for maintenance work and boiler left for forced cooling by deploying ID & FD fans.
- On 01.07.20, fateful day and at the time of accident, forty-seven (47) persons belong to Boiler housekeeping group were working.
- On 01.07.2020, at 7.00 AM, under the supervision of Deputy Chief Engineer, E5 level executive in-charge of housekeeping, a team of 10 workmen reached the floor at 15 ML with an intention to remove the lignite dust from the girder. Found that the work spot was so hot and found the red hot lignite dust (smoldering) inside the girder at front & right side opening. So dropped the plan of cleaning at 15 ML and decided to clean at 32 ML.

- On 01.07.2020, at 7.30 AM, started removing the accumulated lignite dust from the box type girders at 32ML front and rear side of boiler, by engaging 5 workmen on each side using scrappers made of mild steel and Iron pans.
- Around 08:00 hours, four workmen entered inside the rear side girders through right opening and started removing the lignite dust at 32ML. About 100 steel Pans of lignite dust (about 200 kg total) were removed and after completing the work, four workmen came out around 09.30 hours and started taking rest at 28 ML floor. No water washing was carried out.
- Around 08:00 hours, five workmen were engaged at the front side of boiler for the job of removing the lignite dust from the girders at both the ends. About 30 Iron Pans of lignite dust (about 35 kg total) was removed and the work was going on.
- Around 09:45 hours, after completion of cleaning work at rear right side of girder at 32ML, housekeeping in-charge, who was overseeing the cleaning works on the same floor had sent one of the workmen, who was engaged in the cleaning work of the girder, inside the rear side girder at 32ML to check and ensure that the lignite dust was fully removed, so that follow-up action of closing of manhole door work can be given to Boiler Maintenance group. When he entered into the girder to carry out the inspection. DCE was near the opening
- Around 09:53 hours, all of sudden, an explosion took place resulting in fatal injuries to the individual along with 5 other workmen, who all were carrying out cleaning of front side girder at 32ML. Six workmen killed on the spot. The fireball that has leaped out of the girder caused severe

burn injuries to those standing nearby box girders at 28ML floor. (Four workmen and Deputy Chief Engineer). 12 employees were also injured at different levels of 0, 15 & 32 ML.

- Around 09:55 hours, on hearing the blasting sound, fire wing of TS-II unit, Central Industrial Security Force (CISF), NLCIL comprising of 8 fire personnel along with fire tender reached the accident site. Found that fire was at different levels of boiler structures up to 32 ML. Ambulance was called for.
- By the time, Firefighting personnel from TS-II expansion unit also reached the accident site
- Immediately the fire personnel swing into action to put off the fire and searched for causalities
- The Assistant Commandant and three inspectors of Fire reached the accident site and assessed the situation. Requested the additional force from all the seven fire stations and pressed into the operation
- On receipt of request, fire crews from nearby station namely TS-I, TS-I Expansion, Mine-I, Mine-IA and Mine-II reached the accident site and started their operation
- DIG, Sr. Commandant, Deputy Commandant and Sector commanders of the industry reached the accident spot and started executing the fire fighting and rescue operation
- Security personnel of different unit also called and pressed into the operation particularly to control the crowd
- At around 10:08 hours, the accident was informed to the local administration

- At around 10:30 hours, CISF Fire personnel put off the fire completely. Eleven fire personnel from New Neyveli Thermal Power Plant (NNTPP) along with the fire tender reached the accident spot and joined the rescue operation.
- Seventeen persons got injured and were sent to the Hospital of M/s. NLCIL for medical treatment
- After providing initial medical treatment at NLCIL hospital, sixteen persons were sent to Apollo Hospital, Chennai for further and better treatment. One injured person was admitted in NLCIL hospital for treatment of injury on left hand joint.
- Fire personnel continues the search operation of accident area and found six bodies as detailed below:

At the front side of boiler at 28ML:

All the five persons working inside and outside of the girder, killed on the spot. Two bodies were removed from inside of the girders one each at left and right side. Three bodies were removed from outside of the girders two at left and one from right side.

At the rear side of boiler at 28ML floor:

One person who gone inside the girder to check, died on the spot. The Executive, DCE approaching the openings got injured and expired at the Apollo hospital, Chennai on 03.07.20. Four workmen standing at a distance of twenty to twenty-five feet distance on 28 ML floor gratings got severe burn injury.

- At around 13:30 hours, the entire operation was completed and fire crews except TS-II and TS-II Expansion, returned to their respective station after a briefing by the Senior Commandant.

- At around 14:55 hours, after getting final clearance, Fire crews of TS-II and TS-II Expansion returned to their respective fire station.
- At around 12.30 hours a meeting was convened and discussed about the accident and related issues including the treatment, relief measures, compensation and employment on compassionate ground etc. and address the same. The meeting was attended by CMD, Functional Directors, District Collector, Sub Collector, Superintendent of Police, and Revenue Officials. The meeting was continued till evening and could not solve the issue. The meeting was continued on 02.07.20 too and with some local representatives. Finally decided a compensation of Rs. 30 (Rupees thirty lacs) and 5 (Rupees five lacs) lacs to the deceased and injured respectively and a regular job to one of the family member of each deceased.
- Out of sixteen person undergone treatment in Chennai, nine persons died during treatment on various date. Seven injured discharged after the treatment
- On 02.07.20 a closure notice was served by Directorate of Industrial Safety and Health to the Unit-V for the lapse of safety, which caused the death and injuries to the employees.

b. Causes of failure and persons and authorities responsible therefore;

Causes of failure

- The openings provided in the Girders were not closed after the completion of structure erection work.

- Due to lack of knowledge on SOP in carrying out cleaning activities in a confined area as well as technical knowledge about smoldering of accumulated fine lignite dust and probable formation of water gas.
- Due to lack of knowledge on application of water to the red hot lignite, water gas will be generated. Water gas consists of Carbon monoxide and Hydrogen. When Hydrogen reaches the level of 4% in ambient air, gets exploded with the release of enormous energy spontaneously
- SOPs for confined space are not followed.
- Necessary training for the working in confined area was not imparted; awareness program was not conducted for the persons involved in the accident and also in the hazardous areas.
- No work permit was issued before the girder cleaning.

Persons and authorities responsible:

The following officers are mainly responsible for the accident

- The Occupier of the unit no.: 5, TS-II, M/s. NLCIL
- Divisional Head of Operation and maintenance of the unit
- Safety Officer

c. The compliance of norms laid down in Technical Guidance Manual for Thermal Power Plants.

I. Environmental Legislations:

i. Under the Water Act

The industry has obtained consent of TNPCB under the Water (P&CP) Act, 1974 with validity up to 31.03.2020 vide Board's Proceeding dt. 01.08.2019 and

subsequently extended up to 30.09.2020 vide TNPCB office orders dated 01.04.2020 and 01.07.2020 in view of the lockdown due to the pandemic Covid-19.

The industry has been consented to discharge 100 KLD of sewage and 6225 KLD of trade effluent. The industry has provided septic tank/dispersion trench arrangements for the treatment and disposal of sewage.



Figure 7 STP - Clarifier tank

The industry has also provided treatment plant for the waste water generated from the canteen and the treated waste water is disposed on land within the premises for gardening.

The trade effluent generated from Demineralization plant is neutralized in neutralization tank and then treated in a settling tank along with effluent from other sources such as boiler blow down, cooling tower bleed off, floor washings, etc. The settling tank overflow is discharged into an adjacent canal.



Figure 8 Neutralization Tank

The trade effluent generated from Demineralization plant is neutralized in neutralization tank and then treated in a settling tank along with effluent from other sources such as boiler blow down, cooling tower bleed off, floor washings, etc. The settling tank overflow is discharged into an adjacent canal.



Figure 9 Settling tank

The one sample of treated sewage (canteen waste water) and trade effluent were collected by Committee on 10.09.2020 and analyzed in TNPCB Lab. The details of analytical report are furnished below:

Test results of Treated Sewage (canteen waste water)

S No	Parameter	Test Results	Standards	Remarks
1	pH	7.21	5.5 to 9.0	All the parameters of the treated sewage adhere to the standards prescribed by the Board.
2	TSS	12	30	
3	BOD	16	20	

Test results of Treated Trade Effluent

S. No.	Parameter	Test Results	Standards	Remarks
1.	pH	7.20	5.5 to 9.0	All the parameters

2.	TSS	104	100	are within the standards except TSS which is marginally above the standards.
3.	TDS	932	2100	
4.	Chlorides	185	1000	
5.	Sulphate	187	1000	
6.	Oil & Grease	< 2	10	
7.	BOD	21	30	
8.	COD	176	250	
9.	Total chromium	< 0.05	2	
10.	Lead	< 0.05	0.1	
11.	Mercury	< 0.003	0.01	
12.	Arsenic	< 0.01	0.2	

The industry has provided online monitoring system at the outlet of the settling tank for the parameters such as Temperature, pH and TSS and the same has been connected to the Water Quality Watch, TNPCB, Chennai and CPCB server.

The status of compliance of the conditions of the latest consent order is detailed below:

Sl. No.	Condition	Compliance status
1	The unit shall ensure that the treated trade effluent shall satisfy the standards prescribed by the Board before disposal.	The test report of the sample collected on 10.09.2020 reveals that all the parameters are within the limits prescribed by the Board except the TSS (104 mg/litre) which is marginally above the standard (100 mg/litre).

2	The unit shall maintain the online sensor for pH, Temperature, TSS in the treated effluent disposal line in good condition and upload the data to Water Quality Watch, TNPC Board, Chennai.	The online monitoring system is maintained and the data are transferred to the Water Quality Watch, TNPC Board, Chennai.
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ii. Under the Air Act

The industry has been issued with consent of the Board under the Air (P&CP) Act, 1981 up to 31.03.2020 vide Board's Proceeding dated 01.08.2019 and extended up to 30.09.2020 vide Board office orders dated 01.04.2020 and 01.07.2020.

The industry has been consented to let out emission as follows.

Stack No.	Point of emission sources	Air Pollution Control measures	Height of stack (in m)
1	Boiler furnace of unit - I	Electrostatic Precipitator with stack	170
2	Boiler furnace of unit – II	Electrostatic Precipitator with stack	170
3	Boiler furnace of unit – III	Electrostatic Precipitator with stack	170
4	Boiler furnace of unit – IV	Electrostatic Precipitator with stack	220
5	Boiler furnace of unit – V	Electrostatic Precipitator with stack	220
6	Boiler furnace of unit - VI	Electrostatic Precipitator with stack	220
7	Boiler furnace of unit - VII	Electrostatic Precipitator with stack	220

The industry has provided Electro Static Precipitators (ESP) with stacks of suitable height as air pollution control measures to the boilers. The industry has also provided water sprinkler system/ dust suppression system/ fogging system to suppress fugitive emission.

The industry has provided online stack monitoring system for parameters PM, SO₂ and NO_x and connected the same to the Care Air Centre (CAC), TNPCB, Chennai and CPCB.



Figure 10 Online Emission Analyzer

The NLC has installed Continuous Ambient Air Quality Monitoring Stations at the following 5 locations near Thermal Power Station-II and the ambient air quality is monitored by the IIT-M, Chennai/NLC Lab (NABL accredited) for PM₁₀, PM_{2.5}, SO₂, and NO_x. Samples are being collected from each location on alternate days and analyzed.

- i. Block No 29
- ii. Umangalam
- iii. Mudanai village
- iv. Chinna Kappankulam
- v. Vadakkuvellur

The report of analysis of Ambient Air Quality for the period of June 2020 to August 2020 is furnished below.

The AAQM data for the month of June, 2020

Sl.No.	Station	PM ₁₀ (µg/m ³)	PM _{2.5} (µg /m ³)	SO ₂ (µg /m ³)	NO _x (µg /m ³)
1.	Block 29	50.6 to 57.9	18.2 to 26.7	2.8 to 5.0	14.0 to 28.2
2.	Umangalam	45.6 to 67.4	21.9 to 32.5	1.87 to 3.18	16.1 to 22.4
3.	Mudanai	44.6 to 55.7	19.6 to 29.3	2.56 to 4.04	15.3 to 21.4
4.	Chinna Kappankulam	41.1 to 69.6	21.4 to 36.2	2.14 to 3.26	16.6 to 26.6
5.	Vadakku vellur	65.1 to 76.5	27.3 to 38.4	3.98 to 5.68	24.9 to 36.7
Standards		100	60	80	80

The AAQM data for the month of July, 2020

S. No	Station	PM ₁₀ (µg/m ³)	PM _{2.5} (µg /m ³)	SO ₂ (µg /m ³)	NO _x (µg /m ³)
1.	Block 29	41.5 to 54.4	19.1 to 29.9	4.1 to 6.0	18.3 to 25
2.	Umangalam	49.8 to 69.6	20.2 to 33.7	1.98 to 3.25	15.0 to 31.5
3.	Mudanai	48.8 to 69.1	20.2 to 28.6	2.46 to 3.72	16.2 to 23.6
4.	Chinna Kappankulam	45.7 to 57.2	20.5 to 29.4	2.16 to 3.7	16.3 to 26.5
5.	Vadakku vellur	60.9 to 74.3	28.7 to 36.8	3.78 to 4.95	23.2 to 33.9
Standards		100	60	80	80

The AAQM data for the month of August, 2020

S. No	Station	PM ₁₀ (µg/m ³)	PM _{2.5} (µg /m ³)	SO ₂ (µg /m ³)	NO _x (µg /m ³)
1.	Block 29	42.5 -52.2	19.7 to 29.9	2.1 7.5	14.3 - 24.2
2.	Umangalam	58.1 – 68.6	21.3 – 33.7	2.19 – 3.12	16.1 – 30.1
3.	Mudanai	43.2 -58.2	20.2 – 29.8	2.15 – 3.19	15 – 22.6
4.	Chinna Kappankulam	42.6 – 56.5	21.1 – 29.1	2.13 – 3.1	17.3 – 26.6
5.	Vadakku vellur	59.6 – 69.1	21.1 – 35.1	3.69 – 4.76	21 – 30.6
Standards		100	60	80	80

The above data shows that PM₁₀, PM_{2.5}, SO₂ and NO_x in the ambient air are within the standards prescribed by the Board.

The CPCB vide its Letter dated 11.12.2017 has given time limit from March 2021 to Dec 2022 for the implementation of Flue Gas Desulphurization (FGD) to control the emission of SO₂ (in the units 1 to 7 of TPS II) and for the unit 5, the time limit is up to June 2022.

The status of compliance of the conditions of the latest consent order is detailed below:

Sl. No.	Condition	Compliance status
1	The unit shall operate and maintain the Air Pollution Control measures efficiently and continuously so as to satisfy the Emission /Ambient Air Quality standards prescribed by the Board.	The unit has provided air pollution control measures for the point and fugitive sources of emission.

2	The unit shall comply with the emission Standards for Thermal Power Plants as per Ministry's Notification S.O. 3305(E) dated: 07.12.2015, G.S.R. 593(E) dated: 28.06.2018 and as amended from time to time.	The online stack emission data from January to April 2020 shows that PM (67 to 70 mg/ m ³), NO _x (197 to 253 mg/ m ³) were within the standards (100 & 600 mg/ m ³ respectively). The SO ₂ (1336 to 1945 mg/m ³) was above the standards (600 mg/m ³). For the control of SO ₂ emission, the CPCB has given time limit up to June 2022 for providing Flue Gas Desulphurization (FGD). [The full month details for May and June 2020 are not available due to server problem.]
3	The unit shall comply with the MoEF & CC Notifications on Fly Ash Utilization S.O, 763(E) dated 14.09.1999, S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 as amended from time to time.	The industry has provided dry fly ash collection system. The fly ash is disposed to cement industries and brick manufacturers. The bottom ash is sent to Mine-II of NLC India Ltd for back filling in the mined area.
4	The unit shall install Flue Gas Desulphurization (FGD) System based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO ₂ emissions standard of 100 mg/Nm ³ by December 2021, September 2021, June 2021, March 2022, June 2022, September 2022, & December 2022 in unit 1, 2, 3, 4, 5, 6 & 7 respectively so as to comply SO ₂ emission limit as reported.	The industry has initiated action to install FGD system and has informed that tendering process is in progress.

iii. Solid Waste Management:

The industry has provided dry fly ash collection system. The industry generates 3150 Tonnes per day of fly ash. The fly ash is disposed to cement industries and brick manufacturers. The bottom ash/slag is sent to Mine-II of NLC India Ltd for back filling in the mined area.



Figure 11 Silo for fly ash collection

The industry is generating 175 Tonnes per Annum of used/spent oil (Hazardous Waste). The industry has obtained authorization under the Hazardous Waste (Management, Handling and Transboundary Movement) Rules 2008 vide Board's proceeding dated 09.02.2017 with validity up to 08.02.2022.

iv) Environmental Clearance:

NLC Thermal Power Station II was commissioned in two stages from 1986 to 1993. The industry has obtained Environmental Clearance in two stages. The Environmental Clearance for the stage II of the TPS-II (units 4,5,6 & 7 – 4 x 210 MW) was obtained on 05.01.1983 from the Ministry of Environment, GoI., New Delhi. The status of the compliance of the conditions of the environmental clearance is detailed below:

Sl.No.	Conditions	Compliance
1.	Adequate control equipment would be installed to contain the emissions of pollutants from the stacks in such a way that the	The industry has provided Electrostatic Precipitator with stack of suitable height for the boiler. As per the latest CPCB Notification, the

	ambient concentration of SO ₂ and particulate matters remain within the desirable limits of 60µg/m ³ and 150µg/ m ³ respectively.	AAQ standards prescribed is PM ₁₀ - 100 µg /m ³ PM _{2.5} – 60 µg /m ³ SO ₂ - 80 µg /m ³ NO _x - 80 µg /m ³ As per the monitoring report for June 2020, the parameters PM ₁₀ , PM _{2.5} , SO ₂ and NO _x are within the prescribed limits (copy of the report enclosed).
2.	Appropriate monitoring system should be set up to have regular sampling and analysis of the pollutants in the ambient air. This will help in ascertaining the efficient of the equipment and useful in taking suitable measures to maintain the desired ambient standard.	The industry has installed 5 numbers of Continuous Ambient Air Quality monitoring stations near the TPS II and the ambient air quality is monitored by IIT-M, Chennai/NLC Lab (NABL accredited).

d. Compliance with statutory safety norms including hazard risk management.

M/s NLCIL is a public sector enterprise conferred with status of Navratna Company by Government of India. The following statutes are applicable to this organization:

1. The Factory Act, 1948
2. The Tamil Nadu Factory Rules, 1950 and
3. Manufacture, Storage, Import of Hazardous Chemicals Rules, 1989.

The general safety awareness among the workforce and managerial staff found to be satisfactory during the field visits. In addition to that some of the sections of the factories act needs to be looked into, which were one of the contributory factors for the cause of this accident and they are listed as –

Sec 7A General Duties of Occupier (1) Every occupier shall ensure, so far as is reasonably practicable, the health, safety and welfare of all workers while they are at work in the factory.

Sec 11 Cleanliness (1) Every factory shall be kept clean and free from effluvia arising from any drain, privy or other nuisance, and (a) in particular- accumulations of dirt and refuse shall be removed daily by sweeping or by any other effective method from the floors and benches of workrooms and from staircases and passages, and disposed of in a suitable manner.

Sec 14 Dust and Fumes (1) In every factory in which, by reason of the manufacturing process carried on, there is given off any dust or fume or other impurity of such a nature and to such an extent as is likely to be injurious or offensive to the workers employed therein, or any dust in substantial quantities, effective measures shall be taken to prevent its inhalation and accumulation in any workroom, and if any exhaust appliance is necessary for this purpose, it shall be applied as near as possible to the point of origin of the dust, fume or other impurity, and such point shall be enclosed as far as possible.

Sec 33 Pits, sumps, openings in floors, etc.- (1) In every factory fixed vessel, sump, tank, pit or opening in the ground or in a floor which, by reasons of its depth, situation, construction or contents, is or may be a source of danger, shall be either securely covered or securely fenced.

Sec 36. Precautions against dangerous fumes, gases, etc.- (1) No person shall be required or allowed to enter any chamber, tank, vat, pit, pipe, flue or other confined space in any factory in which any gas, fume, vapour or dust is likely to be present to such an extent as to involve risk to persons being overcome thereby, unless it is provided with a manhole of adequate size or other effective means of egress. (2) No person shall be required or allowed to enter any confined space as is referred to in sub-section (1), until all practicable measures have been taken to remove any gas, fume, vapour or dust, which may be present so as to bring its level within the permissible limits and to prevent any ingress of such gas, fume, vapour or dust and unless- (a) a certificate in writing has been given by a competent person, based on a test carried out by himself that the space is reasonably free from dangerous gas, fume, vapour or dust; or (b) such person is wearing suitable breathing apparatus and a belt securely attached to a rope the free end of which is held by a person outside the confined space.

Sec.37. Explosive or inflammable dust, gas, etc.- (1) Where in any factory any manufacturing process produces dust, gas, fume or vapour of such character and to such extent as to be likely to explode on ignition, all practicable measures shall be taken to prevent any such explosion by-

- (b) Removal or prevention of the accumulation of such dust, gas, fume or vapour.
- (c) Exclusion or effective enclosure of all possible sources of ignition.

(2) Where in any factory the plant or machinery used in a process such as is referred to in sub-section (1) is not so constructed as to withstand the probable pressure which such an explosion as aforesaid would produce, all practicable measures shall be taken to restrict the spread and effect of the explosion by the provisions in the plant or machinery of chokes, baffles, vents or other effective appliances.

Sec.38. Precautions in case of fire. - (2) Effective measures shall be taken to ensure that in every factory all the workers are familiar with the means of escape in case of fire and have been adequately trained in the routine to be followed in such cases.

Site observations:

1. SOPs for confined space are not followed.
2. Necessary training for the working in confined area was not imparted; awareness program is not conducted for the persons involved in the accident and also in the hazardous areas.
3. No work permit was issued before the girder cleaning.
4. Proper maintenance schedules are to be prepared.
5. Boiler startup and shutdown procedures shall be developed and followed strictly.
6. Hazard Identification and Risk Assessment shall be renewed.
7. Periodicity of the Mock Drills and frequency shall be enhanced.
8. Safety audit was carried out by National Safety Council in the year 2018. The same may be carried out at the earliest.
9. NLC has prepared onsite emergency plans in 2020 as per Rule 13 of MSIHC Rules 1989. Whereas no evidence was found with regard to full fledged rehearsals on onsite emergency plan. Also, up-dating of telephone numbers in case of superannuation of employees, transfers, promotions shall be carried out as and when required.
10. Off-site Emergency Plan and rehearsals shall be carried out in coordination with the District Collector to mitigate offsite emergency situations arises, if any.

e. Extent of damage of life, human and non-human; public health; and environment including water, soil, air;

The Committee studied the various short and long-term effects of the fire accident on the surrounding areas. The Committee also examined the immediate impacts of the blast and release of high energy on humans, other non-living beings, environment and their likely impact in the short and long-term.

Extent of damage to life and human:

- i. Data obtained from the NLC officials and survived witness reveals that, during this incident, 17 personnel were injured and all were sent to NLC GH for medical treatment, after providing initial medical treatment at NLC GH, 16 injured personnel were further sent to Apollo Hospital Chennai for further treatment and one person with minor injury remained admitted at NLC GH for treatment.
- ii. CISF Fire Wing personnel searched the entire affected area of the Boiler and recovered six dead bodies which were trapped at inaccessible/congested and dark areas inside the girders with rigorous efforts.
- iii. The accident took place within the industry premises, no loss or damage to other life except the following.

Extent of damage to life and human

S. No.	Stages	Dead	Injured
1.	At the time of accident	6	17
2.	First aid given at NLC Hospital	--	17
3.	Treated at Apollo Hospital for further treatment	--	16

4.	Treated at NLC hospital itself and discharged	--	01
5.	Number of persons dead at later stages during treatment	09	--
6.	Number of persons treated at Apollo hospital and discharged	--	07
	Total	15	08

Extent of damage to the property;

Material damages due to the accident and its estimated cost

S. No.	Material damages	Estimated Cost, lacs
1.	Girder material	151
2.	Girder works	153
3.	Refractory material	21
4.	LT cables and Automatics	10
5.	Control & Instrumentation	21
6.	Boiler Lift	128
7.	Civil work including removal of debris	170
	Total	654
(Rupees six and half crore)		

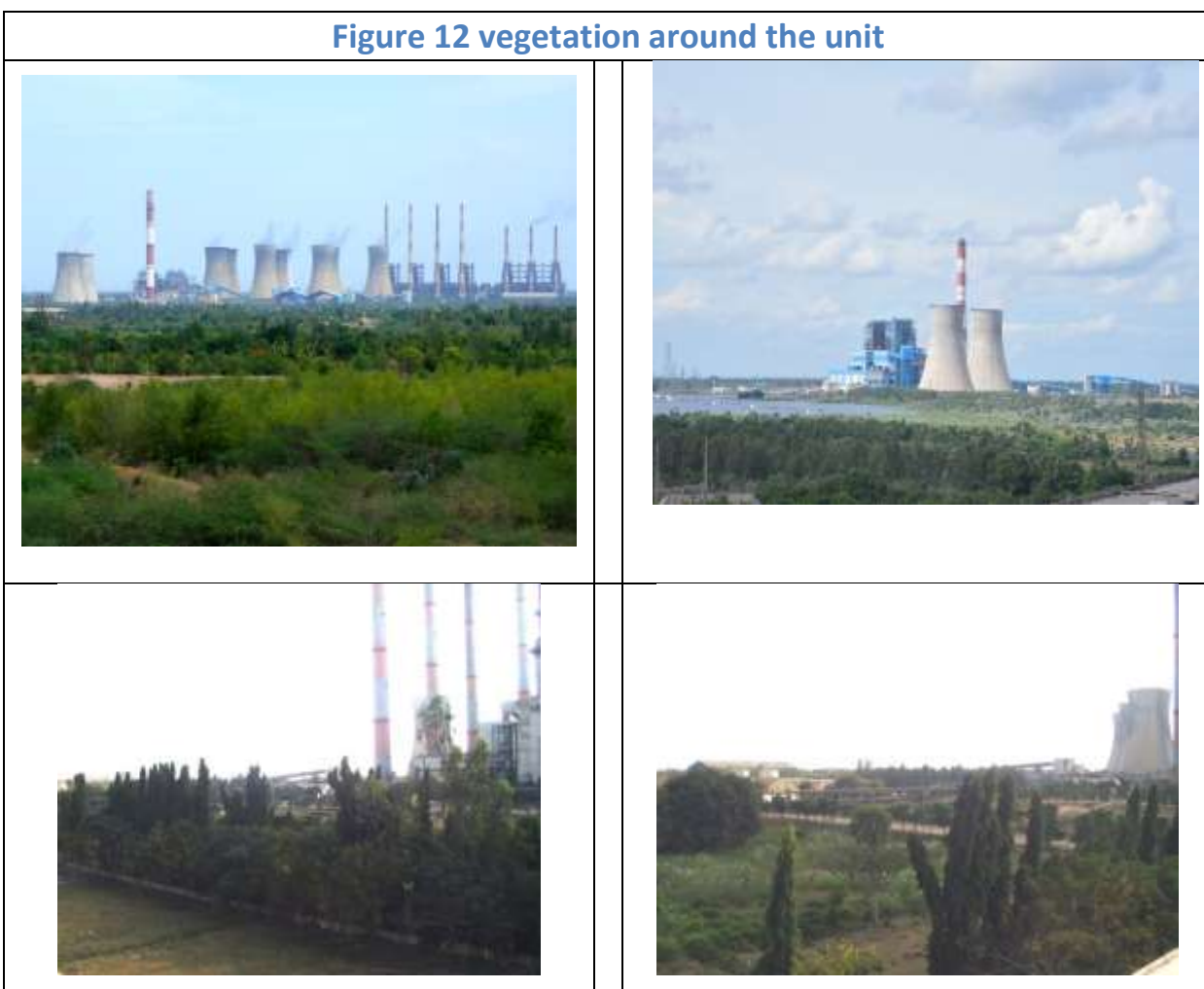
Nonoccurrence of damage to non-humans has been ascertained.

As far as environmental issue is concerned there was no visible damage to the environment including air, water and soil. Observations is based on the following facts:

1. As the incident occurred almost in a confined enclosure type i.e., girder.
2. Within 30-40 minutes fire was engulfed, contained within the work area and did not spread to open environment
3. Incident occurred at 32 M height (within 20-meter radius), flooring of all levels is steel gratings and entire plant area is covered with concrete flooring.

4. From the Online data of five Ambient Air Quality stations located surrounding the unit for the month of June and July, 2020 it is observed that the amount of emission discharged due to the accident is not quantifiable and below the detection limit.
5. Occurrence of healthy vegetation around the plant justifying no damage to vegetation due to this fire accident.
6. No smoke strain is observed on any of the surfaces

Figure 12 vegetation around the unit





f. Steps to be taken for compensation of victims and restitution of the damaged property and environment and the cost involved;

In accordance with the Employee Compensation Act, 1974, the mechanism of calculating the Compensation is

$$\text{Compensation} = 50\% \text{ of Monthly wages} * \text{Relative factor}$$

Ministry of Labour and Employment, GoI has notified **Rs.15000/-** (Rupees fifteen thousand only) as **monthly wages** with effect from 3rd January, 2020 vide Notification S.O.71(E) dt.: 3rd January, 2020. The amount of compensation to be paid to the deceased and injured as per the Employee Compensation Act, 1974 is detailed below:

Sl. No.	Name	Nature of Employment	Date of Birth	Age As On 01-07-2020	Wages	Employee Compensation
1	2	3	4	5	6	7
Deceased						
1	Sivakumar.G	NLCIL Employee	04-10-1967	53	140363	10,70,100
2	Ravichandran C	NLCIL Employee	15-5-1970	50	65380	11,48,175
3	Vaithiyanathan A M	NLCIL Employee	01-04-1972	48	92249	11,98,500
4	Jothiramalingam V	NLCIL Employee	07-10-1972	47	100641	12,23,025
5	Suresh R	NLCIL Employee	26/12/1970	49	89274	11,73,525
6	Ravichandran K*	NLCIL Employee	05-02-1964	56	73107	9,89,625
7	Selvaraj G	Indcoserve Society	05-04-1969	51	15501	NE
8	Elangovan T	Howsicos Society	04-05-1971	49	15501	NE
9	Anandapadmanabhan T	Indcoserve Society	01-01-1976	44	15501	NE
10	Ramanathan D	Private Contract	04-07-1974	46	15501	NE
11	Nagaraj P	Private Contract	05-07-1978	42	15501	NE
12	Silambarasan S	Private Contract	09-07-1995	24	15501	NE
13	Arunkumar S	Private Contract	06-09-1994	26	15501	NE
14	Venkatesaperumal K	Private Contract	04-05-1992	28	15501	NE
15	Padmanaban K	Private Contract	11-04-1991	29	15501	NE
Total						68,02,950

*It is reported that Shri. K. Ravichandran, a regular employee also eligible for the Employee Compensation and all other benefits as other deceased. Payment is kept pending since there is a dispute in identifying the legal heir due to dispute within the family. Once it is resolved, the payment will be released to the legal heir/s.

Whereas Co-operative Society and Private Contract workers are covered under Employee State Insurance (ESI). Under ESI Act, monthly pension at the rate of 90% of last drawn wages, are admissible to them. The industry extended their service in filing the return for the monthly pension and the same is under process. Whereas Statutory, Non statutory and Total compensation paid by the industry is placed at [A8](#), [A9](#) and [A10](#)

The Hon'ble Minister of Coal, GoI has ordered the payment of compensation of Rs.15 lacs to the deceased and regular employment to one of the family members of the deceased.

The Government of Tamilnadu also announced a compensation of Rs.3.0 lacs to fourteen deceased under Chief Minister's Relief Fund and released. Copy of the Order issued to this effect is placed at [A11](#). Thus a sum of Rs.42 lacs has been distributed as a compensation to the fourteen deceased under Chief Minister's Relief Fund by Government of Tamilnadu. A proposal has been sent for sanction of compensation for fifteenth deceased one (Shri. K. Ravichandran) and injured too.

A sum of Rs. 5,17,73,013/- (Rupees five crores seventeen lacs seventy three thousand thirteen only) and Rs. 40 lacs (Rupees forty lacs only) have been distributed to the deceased and injured by M/s. NLCIL towards the compensation respectively. Thus a total of Rs.5,57,73,013/- (Rupees five crore fifty seven lacs seventy three thousand thirteen only) have been distributed towards the compensation.

In addition, M/s. NLCIL has deposited an amount of Rs.5 crores (Rupees five crore only) in the SB account of District Collector, Cuddalore on 21st July, 2020 in

compliance with the Order dt.8th July, 2020 issued by Hon'ble NGT, Principal Bench, New Delhi.

In light of above, the Committee is of the opinion that the amount of Compensation paid by the industry is satisfactory. The process of providing regular employment to one of family members of the victims shall be completed within a period of one year.

Relief measures extended to the victims by the industry:

Restitution of the damaged property and the cost involved;

S. No.	Material damages	Estimated Cost, lacs
1.	Girder material	151
2.	Girder works	153
3.	Refractory material	21
4.	LT cables and Automatics	10
5.	Control & Instrumentation	21
6.	Boiler Lift	128
7.	Civil work including removal of debris	170
	Total	654
(Rupees six and half crore)		

Restitution of Environment and the cost involved;

From the Online data of five Ambient Air Quality stations located in the vicinity of the unit for the month of June and July, 2020, it is observed that there is no abnormal data during this period may be due to the discharge of meagre quantity (Below Detection Level) of emission due to the accident. Thus the impact on the Ambient Air quality is not quantifiable may be due to the combustion rather than a fire accident.

Occurrence of healthy vegetation around the plant justifying no damage to vegetation due to this accident. No smoke stain is observed on any of the surfaces of the plant, within as well as outside of the industry premises. Further it is observed that no chance of impact on the soil and water, since the accident occurred within the girder structure from 15 to 32 m elevation, flooring of all levels is steel gratings and entire plant area is covered with concrete flooring.

Relief measures taken by the industry to the victims of the accident:

- Rs.10 lacs through cheque and Rs.50,000/- in cash paid to the dependents of six deceased regular employees
- Rs.5 lacs through cheque and Rs. 50,000/- in cash paid to the dependents of nine deceased Contract workmen/Supervisor.
- Hon'ble Minister of Coal, Government of India announced Compensation of Rs.15 lacs to the deceased and regular employment to one of the family member of the deceased
- Counseling session and motivation programs are organized for the family of the deceased to lead the normal life, in association with "Art of Living"
- Special cell comprising members from the deceased earlier in M/s. NLCIL is formed to extend moral, psychological support, speed up the settlement process of Statutory and non-Statutory benefits and lead a normal life.
- **Medical treatment** was given at Super Specialty Apollo Hospital, Chennai to the injured. Free Accommodation, food and transportation were extended to all the family members/attendees during the treatment period
- NLC doctors and HR executives were deputed to Apollo Hospital, Chennai to supervise, co-ordinate and extend all possible support to the family

members/attendees during the treatment period. Spared one number of ambulance for the use of injured persons.

- Visit to the house of bereaved and injured persons on weekly basis to provide relief measures, assistance in getting certificates from respective agencies and created awareness about various benefits and compensation applicable to them.
- One Nodal officer was identified to meet the needs of the family members of deceased.
- Fruit baskets and Health Supplement were provided
- A special cell has been constituted to support, meet the requirements, co-ordinate Art of Living program, console, and provide solace
- As a policy, M/s. NLCIL extend the following facilities to the family of deceased
- Allotment of quarter as per their choice
- Posting in the desired units of M/s. NLCIL., Neyveli
- Arranging well being program
- Creating avenues for improving their livelihood
- In claiming compensation from the Authorities

g. Remedial measures to prevent recurrence;

1. Safety study, safety audit, HAZOP study and risk assessment shall be carried out by competent agencies.
2. Girders structural stability study shall be conducted by reputed authorities, like IIT, Structural Engineering Research Institutes, etc.,
3. All the unwanted openings to be closed completely to prevent lignite dust entering into the box girder, except for maintenance or specific work. It is

also essential that before closing the openings, complete removal of lignite deposits by proper cleaning inside the girders (following all the safety norms) is advised.

4. To avoid spreading lignite dust from furnace, mill house, re-suction duct, suitable dust control, dust extraction and dust suppression system shall be provided to check the fugitive emission.
5. Suitable and appropriate explosion vent shall be provided in vertical column in consultation with the designers.
6. Endoscopic camera shall be used to measure the dust level inside the girder to ensure the safety of the unit.
7. For repair of box girder inside and outside by welding, adequate safety measures to be taken before allowing persons into the girders.
8. Thermal scanner shall be used to check the hotness and temperature of the girders both inside and outside before carrying out any work inside the girders to remove the lignite dust only with the supervision of NLCIL staff with the safety clearance.
9. Only trained persons and contract labours shall be allowed.
10. No person shall be allowed inside the box girder without taking adequate safety procedures like confined space work permit.
11. The points of origin of lignite dust leakage shall be identified and suitable engineering measures shall be taken to arrest the spillages and the discharge of emission.
12. SOP shall be modified for the periodic inspection of girder and other structures for the deposition of lignite dust and periodical removal of the same. Without work permit, no work in any nature shall be carried out.
13. Periodic rigorous housekeeping shall be carried out.

h. Any other incidental or allied issues found relevant

Earlier Incidence of fire in boiler of Unit 6 on 07.05.2020 and conclusion of the committees:

A fire incident in Unit-6 Boiler of TS-2 was occurred on 07-5-2020 at 16.41 hrs. In order to analyze the root cause of the incidence and suggest remedial measures to prevent reoccurrence of such incident in future, a committee was constituted which has suggested

The committee thoroughly enquired with respective responsible officials and inspected Boilers in Units 5, 6 & 7 and assessed the damages and observed all evidences. All DCS historical data of Critical Measurements, Trends and SOE print outs of Units 5, 6 & 7 during the incident on 07-05-2020 were collected and analyzed in depth. Reports of six similar incidents occurred earlier in the Units 5 & 6, since 2001 were collected and reviewed critically

After complete analysis of data and evidences, the committee held detailed deliberations on the 2 possibilities for the Fire Incident (i) either due to localized pressurization inside the Boiler Furnace (ii) Explosion inside the horizontal box type girder at 42ML right side. As all the evidences were supporting the theory of Explosion inside the horizontal box type girder, the committee concluded that explosion inside the girder Box, outside the Boiler Furnace as root cause for the fire incident.

Accordingly, recommendations were given to various working areas viz. Boiler Structural Maintenance, House Keeping, Boiler Maintenance, Lignite Handling

System, Operation, Technological Up gradation (Control and Instrumentation) to avoid both possibilities of Boiler Furnace Inside Explosions as well as Boiler Outside Girders Explosion in order to operate the Units safely, without any untoward similar incidents in future.

In addition, the committee strongly recommended the complete Healthiness Survey of all 07 Units with respect to Boiler Main Structures by Structural Specialist agencies like ``Structural Engineering Research Centre"(SERC, CSIR-Chennai). The committee also suggested that extra care should be taken during cleaning by following strict house-keeping measures at all locations especially in the areas of Boiler and Lignite Handling System so that Lignite Dust accumulation is avoided.

14. CONCLUSION OF THE REPORT:

The Accident;

On 1st July 2020, a fire incident referred to as “Tamilnadu Neyveli Boiler Blast: 6 dead and 17 injured”, occurred at the 15 ML girder of the Boiler supporting structure of unit – V of Thermal Power Station – II (TS-II), M/s. NLC India Limited, Village Ammeri, Neyveli, Viruthachalam Taluk, Cuddalore District.



Figure 13 Boiler Lift

The accident took the life of six persons on the spot and subsequently nine persons while undergoing treatment at Super Specialty Hospital i.e., Apollo Hospital, Chennai. Sixteen persons were hospitalized at Apollo Hospital, Chennai and one person treated at NLC hospital itself. Besides causing damage to the industry's properties viz., boiler supporting structure, lift and cable.

Fire fighting, Rescue and evacuation operations during the accident were carried out by the Fire wing of Central Industrial Security Force (CISF) unit, NLC, Neyveli. On hearing the blast sound, fire wing of TS-II reached the spot immediately without waiting for an emergency call and swing into action.

The Hon'ble Minister of Coal, GoI has ordered payment of compensation of Rs.15 lacs to the deceased and regular employment to one of the family members of the deceased.

The Government of Tamilnadu also announced a compensation of Rs.3.0 lacs to fourteen deceased under Chief Minister's Relief Fund and released. Thus a sum of Rs.42 lacs has been distributed as compensation to the fourteen deceased under Chief Minister's Relief Fund by Government of Tamilnadu. A proposal has been sent for sanction of compensation for fifteenth deceased one and injured too.

A sum of Rs. 5,17,73,013/- (Rupees five crores seventeen lacs seventy three thousand thirteen only) and Rs. 40 lacs (Rupees forty lacs only) have been distributed to the deceased and injured by M/s. NLCIL towards the compensation respectively. Thus a total of Rs.5,57,73,013/- (Rupees five crore fifty seven lacs seventy three thousand thirteen only) have been distributed towards the compensation.

In addition, M/s. NLCIL has deposited an amount of Rs.5 crores (Rupees five crore only) in the SB account of District Collector, Cuddalore on 21st July, 2020 in compliance with the Order dt.8th July, 2020 issued by Hon'ble NGT, Principal Bench, New Delhi.

Hon'ble NGT, Principal Bench, New Delhi constituted an Independent Committee to submit a report with a detailed term of reference.

The Committee visited the accident site with and without witnesses, heard the version of the industry, examined the records and had extensive discussions with all the stakeholders.

Reasons for the Fire Accident/Blast

The Committee has identified the following as the main causes behind the blast followed by the fire accident:

- No separate SOP was created for the periodic housekeeping including cleaning of girders.
- No work permit was issued
- The safety protocols were not followed. The Process Safety Management (PSM) systems were not implemented.
- Trained manpower was not deployed
- Safety awareness program was not conducted
- Failure to submit HAZOP & Risk Assessment Reports

- The Onsite Emergency plan did not take into account any likely scenario of hydrogen gas generation on applying water to smoldering (lignite dust in hot condition) and such a case was never considered for emergency mock drill.

Root Cause: In the light of the above, the Committee is of the view that the root causes of the accident in the girder of boiler supporting structure can be attributed to insufficient knowledge amongst staff, insufficient knowledge of the chemical properties of lignite, especially formation of water gas when water is applied on the lignite in hot conditions, poor safety protocol, poor safety awareness, inadequate risk assessment and response, poor process safety management systems and failure in conducting awareness programs among all the employees and workers about handling the smoldering.

Possible root cause of Analysis has been represented through **Fish Bone Diagram**. The diagram is placed at [A12](#).

Onsite Emergency Plan:

Lack of awareness for water gas generation: The Onsite emergency plan prepared by NLC lacked any measures to combat smoldering but only provided for fire occurrences and other accident scenarios. The NLC had no Emergency Plan to tackle the smoldering and water gas generation.

To avoid recurrence of such incidences in future, M/s NLCIL is advised to take the following preventive measures.

1. Carry out HIRA study of processes to assess the inherent risk associated with the different activities in process.
2. HAZOP study shall be conducted.

3. Strict Safety precautions to be taken before resuming operation of the units in accordance with the advisory issued by the Chairman, CPCB vide L.No.: B-29014/IPC-I/MSIHC/2020 dt 8th May, 2020 (A13)
4. SOPs and SMPs of all the processes may be prepared or revised and strict adherence to the standing procedures must be ensured.
5. SOP for handling of lignite and lignite dust in hot condition, is silent. The procedures of handling lignite and lignite dust in the hot condition may be incorporated in the SOP.
6. Training to workforce should be further strengthened on need-based requirements.
7. Safety Audit should be done strictly at prescribed intervals.
8. Approved emergency plan should be regularly updated and followed
9. Awareness program shall be conducted to the workforce before commencing the activity
10. Rigorous Housekeeping protocol shall be followed



Chandrasekhar Sakhamuri
District Collector Cuddalore



Dr. M. Thirunavoukkarasu
Senior Principal
Scientist & Head
NEERI, Chennai



G.P. Nijlingappa
Director (Safety)
RLI, Chennai



K. Elankumaran
JCEE, TNPCB, Trichy



S. Karthikeyan, Sci-C
CPCB, RD, Chennai

List of Enclosures

S.No.	Document	Label
1.	Recuse letter issued by IIT-M	A1
2.	Independent Committee Constitution Order	A2
3.	Agenda of the first meeting of Independent Committee	A3
4.	Minutes of the first meeting of Independent Committee	A4
5.	Consent renewal to operate under Water (P&CP) Act, 1974	A5
6.	Consent renewal to operate under Air (P&CP) Act, 1981	A6
7.	Authorization under Hazardous and Other waste (Management & Transboundary Movement) Rules, 2016	A7
8.	Order issued by the District Collector for the compensation of the deceased and injured	A8
9.	Statement showing Statutory Compensation paid by the industry	A9
10.	Statement showing Non Statutory Compensation paid by the industry	A10
11.	Statement showing total Compensation paid by the industry	A11
12.	Fish Bone Diagram	A12
13.	Advisory on safety precautions issued by Chairman, CPCB	A13



Phone: 0091-44-2257 0694 / 0091-44-2257 8001
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Email : bhaskar@iitm.ac.in / director@iitm.ac.in
Web : http://www.iitm.ac.in

दूरभाष : ००९१-४४-२२५७ ०६९४ / ००९१-४४-२२५७ ८००१
फैक्स : ००९१-४४-२२५७ ८००३ / ००९१-४४-२२५७ ०५०९

प्रो. भास्कर राममूर्ति
Prof. Bhaskar Ramamurthi
निदेशक
Director

DIR/2020
July 27, 2020

To
Shri S. Suresh
Regional Director (Bengaluru)
Central Pollution Control Board
Ministry of Environment, Forest and Climate Change, GoI
A-Block, Nisarga Bhavan, 1st and 2nd Floors,
7th D Cross, Thimmaiah Road
Shivanagar, BENGALURU-560079

Sub: Constitution of Independent Committee in compliance of
Hon'ble NGT Order No.08/2020 dated 8th July 2020 – reg.
Ref: 1. NGT OA No.108/2020
2. Your letter F.No.CPCB/RDC/NGT108)2020)/NLC/20-21/286
dt.14/7/2020

Dear Shri Suresh,

With reference to your letter second cited it is informed that as IIT Madras is already assisting Neyveli Lignite Corporation by serving on their Committee to investigate the fire incident, we request you to recuse IITM from being part of the Committee constituted by NGT in view of possible conflict of interest.

With warm regards,

Sincerely yours,


(Bhaskar Ramamurthi)



CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment, forest & Climate Change, Govt. of India

NGT/TIME BOUND MANNER

F.No.:CPCB/RDC/NGT/NLC108(2020)/20-21/ 499

31st August, 2020

ORDER

Subject: Constitution of Independent Committee as per the Order of Hon'ble NGT (Principal Bench), New Delhi in the matter of O.A. 108/2020

- Ref.: 1. Original application no.: 108/2020 before the Hon'ble NGT, Principal Bench, New Delhi
2. Hon'ble NGT, Principal Bench Order dated 08.07.2020 in OA no.: 108/2020

In compliance with the Order of the Hon'ble National Green Tribunal, Principal Bench, New Delhi in the matter of OA 108 /2020 & to ascertain facts taking into account the version of the industrial unit and other stake holders and the circumstances and submit an independent report on the Fire Accident occurred at M/s. NLCIL, Neyveli, Cuddalore District, Tamilnadu by visiting the site, an Independent committee is being constituted, as suggested by Hon'ble NGT. One of the institution IITM recuse themselves in view of possible conflict of interest since they are in another Committee constituted by M/s. NLCIL to investigate the fire incident. Therefore, DGFASLI, Mumbai has been considered as an alternate member under intimation to The Registrar, Hon'ble NGT, Principal Bench, New Delhi through HO.

In view of above, an independent committee, with the following members, is being constituted herewith based on the nominations received from the respective institutions:

S. No	Expert Member	Organization	Contact details Mob no & email ID	Capacity
1.	Shri.Chandrasekhar Sakhamuri, IAS. District Collector	District Collectorate, Cuddalore	9444139000 & collrcud@nic.in	Member
2.	Dr. M. Thirunavoukkarasu Senior Principal Scientist & Head	CSIR-NEERI Chennai Zonal Centre	9489289912 & mt_arasu@neeri.res .in	Member
3.	Shri. G. P. Nijlingappa Director (Safety)	Regional Labour Institute, Chennai	09444440391 & gpn@dglasli.nic.in	Member

31/8/2020

Regional Directorate (Chennai), Second Floor, 77 - A, South Avenue Road, Ambattur Industrial Estate,
Chennai, Tamil Nadu 600 058, E-mail: cpcbrcchennai@gmail.com

Head Office: Parivesh Bhawan, East Arjun Nagar, Delhi - 110 032
Telephone: 011 - 43102030, Fax 22305793, 22307078, 22301932, 22304945
E-mail: cpcb@nic.in Website: www.cpcb.nic.in



CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment, forest & Climate Change, Govt. of India

4.	Shri. K. Elankumaran Joint Chief Environmental Engineer	Tamilnadu Pollution Control Board	08056042289 & elankumaran2010@ gmail.com	Member
5.	Shri. S. Karthikeyan Scientist C	Central Pollution Control Board, Regional Directorate, Chennai	9243424389 & skarthikeyan.cpcb @nic.in	Nodal Officer

Terms of Reference:

The committee shall

1. Attend the meeting through video conference as per requirement
2. Visit the site, ascertain facts taking into account the version of the industrial unit and other stake holders and the circumstances;
3. The sequence of events;
4. Causes of failure and persons and authorities responsible therefore;
5. The compliance of norms laid down in Technical Guidance Manual for Thermal Power Plants
6. Compliance with statutory safety norms including hazard risk management
7. Extent of damage to life, human and non-human; public health; and environment – including water, soil, air;
8. Steps to be taken for compensation of victims and restitution of the damaged property and environment, and the cost involved;
9. Remedial measures to prevent recurrence;
10. Any other incidental or allied issues found relevant
11. In consistent with Hon'ble NGT Order dt.: 01.06.2020 in OA no.: 73/2020 related to Gas leak at M/s. L.G. Polymers Chemical Plant in RR Venkatapuram village, Visakhapatnam, Andhra Pradesh, the committee may also prepare restoration plan and finally quantify the compensation required to be paid
12. The Committee shall submit a report to Hon'ble NGT, Principal Bench, New Delhi on or before 07.10.2020. A copy of the report be uploaded on website of CPCB for comments of any affected party.
13. CPCB being the nodal agency for compliance and co-ordination of the activities, shall provide all technical support in carrying out the monitoring as per the committee decision.
14. CPCB will utilize the services of Consultant Scientist Dr. M. Madhusudanan as per requirement.
15. The committee may require to visit the site and carryout detailed study including monitoring, if it is required to assess the pollution and environmental damages caused by the industry in Neyveli, Cuddalore District, Tamilnadu. Details of the site visit, study and further course of action will be decided during the course of the Committee proceedings.

Handwritten signature
31/8/2020

Regional Directorate (Chennai), Second Floor, 77 - A, South Avenue Road, Ambattur Industrial Estate,
Chennai, Tamil Nadu 600 058, E-mail: cpcbrcchennai@gmail.com

Head Office: Parivesh Bhawan, East Arjun Nagar, Delhi – 110 032
Telephone: 011 – 43102030, Fax 22305793, 22307078, 22301932, 22304945
E-mail: cpcb@nic.in, Website: www.cpcb.nic.in



CENTRAL POLLUTION CONTROL BOARD
Ministry of Environment, forest & Climate Change, Govt. of India

16. *Monitoring and Analysis of samples shall be carried out by the third party (NABL accredited or EPA recognized laboratory) as decided by the Committee*
17. *In accordance with the Hon'ble NGT orders dated 07-02-20 & 20-04-2017 in the matter of O.A. 24 of 2011, CPCB shall pay sitting fee only shall be paid to local members of the committee attending the meetings/inspections @Rs.2500 per meeting/per day and no DA will be paid. In case of outstation members of the committee attending the meetings/inspections TA/DA shall be paid. However, private taxi fares shall be restricted to train fares of the entitled class. No TA shall be paid, if transportation is arranged by the Nodal Agency.*
18. *The expenditure on this regard will be met from the budget head "NGT 25%" at CPCB.*

421. 21,231
(S. Suresh) 31181202
Regional Director
Chennai

Copy to

1. Shri.Chandrasekhar Sakhamuri, IAS., District Collector, Cuddalore
2. Dr. M. Thirunavoukkarasu, Sr. Principal Scientist & Head, NEERI, Chennai
3. Shri. G. P. Nijlingappa, Director (Safety), RLI, Chennai
4. Shri. K. Elankumaran, JCEE, TNPCB, Trichy
5. Shri. S. Karthikeyan, Sci-C, CPCB, RD, Chennai
6. Shri. Nazimuddin, Sci-E-cum-I/c. IPC-III, CPCB, HO, Delhi
7. Shri. G. Rambabu, Sci-E-cum-I/c. Law Division, CPCB, HO, Delhi
8. Accounts Section, CPCB, RD, Bengaluru
9. The Nodal Officer, M/s. NLCIL, Neyveli.

Regional Directorate (Chennai), Second Floor, 77 - A, South Avenue Road, Ambattur Industrial Estate,
Chennai, Tamil Nadu 600 058, E-mail: cpcbrcdchennai@gmail.com

Head Office: Parivesh Bhawan, East Arjun Nagar, Delhi – 110 032
Telephone: 011 – 43102030, Fax 22305793, 22307078, 22301932, 22304945
E-mail: cpcb@nic.in, Website: www.cpcb.nic.in

**First Meeting of the Independent Committee constituted in compliance with
Hon'ble NGT case in the matter of OA no.: 108(2020)
on 02-09-2020 & 1500 hours through video conference**

AGENDA OF THE FIRST MEETING

- ❖ Due to ongoing Nationwide lock down, the meeting is proposed through video conference. The inconvenience is regretted.
- ❖ Self introduction by all the members/participants
- ❖ Introduction – The activities proposed in the case by CPCB
- ❖ Request the Collector, Cuddalore district to chair the meeting
- ❖ Study on the assessment of physical and environmental damage on account of the accident
 - Objective and scope to be identified
 - Methodology
- ❖ Assessment of damage on account of
- ❖ Request M/s. NLCIL to make their presentation
- ❖ Interaction
- ❖ Fixing up the tentative date for site inspection for the on the site assessment
- ❖ Any other matter proposed by the members of the Independent Committee.

**First Meeting of the Independent Committee constituted in compliance
with Hon'ble NGT case in the matter of OA no.: 108(2020)
on 02-09-2020 & 1500 hours through video conference**

MINUTES OF THE FIRST MEETING

The first meeting was held on 02-09-2020 at 3 PM through video conference at <https://meet.google.com/ngj-szeu-fdp>

The meeting was attended by the following members

1. Shri. Chandrasekhar Sakhamuri, IAS, District Collector, Cuddalore District
2. Dr. M. Thirunavoukkarasu, Senior Principal Scientist & Head, NEERI, Chennai
3. Shri. G. P. Nijlingappa, Director (Safety), Regional Labour Institute, Chennai
4. Shri. K. Elankumaran Joint Chief Environmental Engineer, TNPCB, Trichy
5. Shri. S. Karthikeyan, Scientist – C, CPCB, RD, Chennai

The meeting was chaired by Shri. Chandrasekhar Sakhamuri, IAS, District Collector, Cuddalore District

All members introduced themselves

The Nodal officer (NO) from the nodal agency, CPCB explained the methodology to be followed in the present case right from the invitation of nominations from different departments/Organizations as directed by Hon'ble NGT till the e-filing of the Report and the role of Nodal agency/CPCB & NO.

Shri. S. Pandarasivan, GM (Operation & Planning), M/s.NLCIL, Neyveli made a presentation on the issue covering the following points:

- Introduction about the company
- Safety protocol
- Onsite and Offsite emergency plan
- Sequence of events
- Reason for the accident
- Root cause analysis
- Initial response
- Rescue and immediate medical aid
- Relief measures, interim compensation, Compensation (Statutory and non-statutory), practices followed by different PSUs & M/s. NLCIL, Family pension and reemployment
- External Committee to investigate Negligence, Responsibility and violations
- External Committee to develop a SOP to prevent such accidents

Based on the presentation, the members deliberated on following points

- Circulate a brief note about the company, preferably in a questionnaire form and relevant documents before the visit (Action: GM/NO)
- Site inspection on 9th & 10th September, 2020
- Preparation of report based on time line agreed upon
- Any other issues like monitoring etc. shall be decided during inspection

The meeting ended with vote of thanks to the chair

CONSENT ORDER NO. 1908120343417 DATED: 01/08/2019.

PROCEEDINGS NO.T2/TNPCB/F.0066CUD/RL/CUD/W/2019 DATED: 01/08/2019

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT – M/s. NLC INDIA LIMITED, THERMAL POWER STATION II , S.F.No. 374,375,400,617,618,619 etc, AMMERI village, Virudhachalam Taluk and Cuddalore District - Renewal of Consent for the operation of the plant and discharge of sewage and/or trade effluent under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act 6 of 1974) – Issued- Reg.

REF: 1. CTO Proc. No. T8/TNPCB/CUD/21409/W&A/2008 dated 08.04.2008
2. Latest RCO Proc. No.T2/TNPCB/F.0066CUD/RL/CUD/W/2018 dated 31/10/2018
3. IR.No : F.0066CUD/RL/JCEE-M/CUD/2019 dated 26/03/2019

RENEWAL OF CONSENT is hereby granted under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 as amended in 1988 (Central Act, 6 of 1974) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The General Manager
M/s.NLC INDIA LIMITED, THERMAL POWER STATION II,
S.F.No. 374,375,400,617,618,619 etc,
AMMERI Village ,
Virudhachalam Taluk ,
Cuddalore District .

Authorising the occupier to make discharge of sewage and /or trade effluent.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending March 31, 2020

R. RAMASUBBU
Digitally signed by R.
RAMASUBBU
Date: 2019.08.02 13:31:29
+05'30'

**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products/byproducts (Col. 2) at the rate (Col 3) mentioned below. Any change in the product/byproduct and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Electricity (210 MW x 7 UNITS)	1470	MW
By-Product Details			
1.	Nil	0	Nil
Intermediate Product Details			
1.	NIL	0	Nil

2. This renewal of consent is valid for operating the facility with the below mentioned outlets for the discharge of sewage/trade effluent. Any change in the outlets and the quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Outlet No.	Description of Outlet	Maximum daily discharge in KLD	Point of disposal
Effluent Type : Sewage			
1.	Sewage	100.0	On Industrys own land
Effluent Type : Trade Effluent			
1.	Trade Effluent	6225.0	INTO INLAND SURFACE WATER (ADJACENT CANAL)

Additional Conditions:

1. The unit shall ensure that the treated trade effluent shall satisfy the standards prescribed by the Board before disposal.
2. The unit shall maintain the online sensor for pH, Temperature, TSS in the treated effluent disposal line in good condition and upload the data to Water Quality Watch, TNPC Board, Chennai .

R. RAMASUBBU Digitally signed by R. RAMASUBBU
Date: 2019.08.02 13:32:11 +05'30'

**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

To
The General Manager,
M/s.NLC INDIA LIMITED, THERMAL POWER STATION II,
Ammeri and Kunankurichi Village,Neyveli,
Pin: 607807

Copy to:

- 1.The Commissioner, KAMMAPURAM-Panchayat Union, Virudhachalam Taluk, Cuddalore District .
 2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, CUDDALORE.
 3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Triuchirappalli.
 4. File
-

CONSENT ORDER NO. 1908220343417 DATED: 01/08/2019.

PROCEEDINGS NO.T2/TNPCB/F.0066CUD/RL/CUD/A/2019 DATED: 01/08/2019

SUB: Tamil Nadu Pollution Control Board - RENEWAL OF CONSENT –M/s. NLC INDIA LIMITED, THERMAL POWER STATION II , S.F.No. 374,375,400,617,618,619 etc, AMMERI village, Virudhachalam Taluk and Cuddalore District - Renewal of Consent for the operation of the plant and discharge of emissions under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) –Issued- Reg.

REF: 1. CTO Proc. No. T8/TNPCB/CUD/21409/W&A/2008 dated 08.04.2008
2. Latest RCO Proc. No.T2/TNPCB/F.0066CUD/RL/CUD/W/2018 dated 31/10/2018
3. IR.No : F.0066CUD/RL/JCEE-M/CUD/2019 dated 26/03/2019

RENEWAL OF CONSENT is hereby granted under Section 21 of the Air (Prevention and Control of Pollution) Act, 1981 as amended in 1987 (Central Act 14 of 1981) (hereinafter referred to as “The Act”) and the rules and orders made there under to

The General Manager
M/s.NLC INDIA LIMITED, THERMAL POWER STATION II,
S.F.No. 374,375,400,617,618,619 etc,
AMMERI village,
Virudhachalam Taluk,
Cuddalore District.

Authorizing the occupier to operate the industrial plant in the Air Pollution Control Area as notified by the Government and to make discharge of emission from the stacks/chimneys.

This is subject to the provisions of the Act, the rules and the orders made there under and the terms and conditions incorporated under the Special and General conditions stipulated in the Consent Order issued earlier and subject to the special conditions annexed.

This RENEWAL OF CONSENT is valid for the period ending March 31, 2020

R. RAMASUBBU
Digitally signed by R.
RAMASUBBU
Date: 2019.08.02 13:33:02
+05'30'
**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

SPECIAL CONDITIONS

1. This renewal of consent is valid for operating the facility for the manufacture of products (Col. 2) at the rate (Col. 3) mentioned below. Any change in the products and its quantity has to be brought to the notice of the Board and fresh consent has to be obtained.

Sl. No.	Description	Quantity	Unit
Product Details			
1.	Electricity (210 MW x 7 UNITS)	1470	MW
By-Product Details			
1.	Nil	0	Nil
Intermediate Product Details			
1.	NIL	0	Nil

2. This renewal of consent is valid for operating the facility with the below mentioned emission/noise sources along with the control measures and/or stack. Any change in the emission source/control measures/change in stack height has to be brought to the notice of the Board and fresh consent/Amendment has to be obtained.

I Point source emission with stack :				
Stack No.	Point Emission Source	Air pollution Control measures	Stack height from Ground Level in m	Gaseous Discharge in Nm3/hr
1	Boiler Furnace	ESP with stack	170	1641600
2	Boiler Furnace	ESP with stack	170	1641600
3	Boiler Furnace	ESP with stack	170	1641600
4	Boiler Furnace	ESP with stack	220	1980000
5	Boiler Furnace	ESP with stack	220	1980000
6	Boiler Furnace	ESP with stack	220	1980000
7	Boiler Furnace	ESP with stack	220	1980000
II Fugitive/Noise emission :				
Sl. No.	Fugitive or Noise Emission sources	Type of emission	Control measures	
1.	Lignite Storage Yard	Fugitive	Water sprinkler system	
2.	Lignite Transfer in Conveyors	Fugitive	Dust suppression system/Fogging system	

Additional Conditions:

1. The unit shall operate and maintain the Air Pollution Control measures efficiently and continuously so as to satisfy the Emission /Ambient Air Quality standards prescribed by the Board.
2. The unit shall comply with the emission Standards for Thermal Power Plants as per Ministry's Notification S.O. 3305(E) dated: 07.12.2015, G.S.R. 593(E) dated: 28.06.2018 and as amended from time to time.
3. The unit shall ensure the compliance of MoEF & CC Notification G.S.R 02(E) dated 02.01.2014 as amended time to time regarding use of raw or blended or beneficiated/washed coal with ash content not exceeding 34%, as applicable.
4. The unit shall comply with the MoEF & CC Notifications on Fly Ash Utilization S.O, 763(E) dated 14.09.1999, S.O. 979(E) dated 27.08.2003, S.O. 2804(E) dated 3.11.2009, S.O. 254(E) dated 25.01.2016 as amended from time to time.
5. The unit shall comply with the standards prescribed by the MoEF, New Delhi for the thermal power plants vide its notification dated 07.12.2015 within the time limit prescribed by the CPCB vide its Direction dated 11.12.2017.
6. The unit shall maintain online sensors for SO₂, PM and Nox in the stack provided for the Boiler in good condition and upload the data to CARE AIR Centre, TNPC Board, Chennai.
7. The unit shall comply with the National Ambient Air Quality Standards issued vide MoEF, GoI Notification GSR826 (E) dated 16.11.2009
8. The unit shall install Flue Gas Desulphurisation (FGD) System based on Lime/Ammonia dosing to capture Sulphur in the flue gases to meet the SO₂ emissions standard of 100 mg/Nm³ by December 2021, September 2021, June 2021, March 2022, June 2022, September 2022, & December 2022 in unit 1, 2, 3, 4, 5, 6 & 7 respectively so as to comply SO₂ emission limit as reported.
9. The unit shall install Selective Catalytic Reduction (SCR) system or the Selective Non-Catalytic Reduction (SNCR) system or Low NO_X Burners with Over Fire Air (OFA) system to achieve NO_X emission standard of 100 mg/Nm³ and achieve progressive reduction so as to comply NO_X emission limit by the year 2022 as reported.
10. The unit shall set up Continuous Ambient Air Quality Monitoring System (CAAQMS) to monitor common/criteria pollutants from the flue gases such as PM₁₀, PM_{2.5}, SO₂, NO_X within the plant area at least at one location" on 24x7 continuous basis throughout the year and the monitoring of other locations in such a way where the maximum ground level concentration occurs (atleast three locations outside the plant area covering upwind and downwind direction at an angle of 120 each) shall be carried out manually.
11. The unit shall upload the CAAQMS data continuously in the TNPC Board Care Air Centre portal. The unit shall also take 104 measurements in a year taken twice a week 24 hours at uniform interval, in manual Ambient Air Quality Stations and furnish the report to the Board every month.
12. The unit shall operate and maintain adequate dust extraction/suppression system in coal handling, ash handling areas and material transfer points to control fugitive emissions.
13. The unit shall operate and maintain appropriate Air Pollution Control measures (DEs/DSs) at all the dust generating sources including sufficient water sprinkling arrangements at various locations viz., roads, excavation sites, crusher plants, transfer points, loading and unloading areas, etc.
14. The unit shall dispose the Ash generated from the Boiler to the cement industries/fly ash brick manufacturers then and there without any accumulation.
15. The unit shall continue to develop more green belt in the premises.

R. RAMASUBBU Digitally signed by R. RAMASUBBU
Date: 2019.08.02 13:33:34 +05'30'

**For Member Secretary,
Tamil Nadu Pollution Control Board,
Chennai**

To
The General Manager,
M/s.NLC INDIA LIMITED, THERMAL POWER STATION II,
Ammeri and Kunankurichi Village, Neyveli,
Pin: 607807

Copy to:

1. The Commissioner, KAMMAPURAM-Panchayat Union, Virudhachalam Taluk, Cuddalore District .
2. The District Environmental Engineer, Tamil Nadu Pollution Control Board, CUDDALORE.

3. The JCEE-Monitoring, Tamil Nadu Pollution Control Board, Triuchirappalli.

4. File



No.TNPCB/P&D/2020

Date: 01. 07.2020

OFFICE ORDER

EXTENSION OF VALIDITY PERIOD OF CONSENT TO OPERATE / AUTHORIZATION EXPIRING ON 31.03.2020 FOR A PERIOD OF ANOTHER THREE MONTHS TILL 30.09.2020 – REGARDING.

Ref: Office Order No. TNPCB/P&D/2020, Dated 01.04.2020

Consequent upon the outbreak of Corona Virus (COVID – 19), state wide lock down with effect from 25.03.2020 has been imposed as a preventive measure to contain its spread. However, many critical and essential activities have to be operated uninterruptedly, so that all essential goods and services are made available to the people. Similarly health care facilities and waste management facilities are also to be operated continuously to maintain hygiene of the community.

In view of the extraordinary circumstances, the Tamil Nadu Pollution Control Board by virtue of powers under Section 25 of the Water (Prevention and Control of Pollution) Act, 1974 and Section 21 of the Air (Prevention & Control of Pollution) Act, 1981 extended the validity of Consent to Operate for all the units, who have valid consent to operate upto 31st March 2020 for a period of three months upto 30th June 2020. As the Lockdown is still in force and for the same reasons stated above, the validity of the consent to operate for all the units who have valid consent to operate upto 31st March 2020 is extended for a further period of three months (i.e) upto 30th September 2020.

Similarly the units/facilities, which are authorized by the Board under:

- i. Hazardous and other waste (Management & Transboundary Movement) Rules, 2016.
- ii. Bio Medical Waste Management Rules, 2016
- iii. Solid Waste Management Rules, 2016

and where the authorization is valid upto 31.03.2020, the authorizations granted under the above Rules are also extended upto 30.09.2020.

This extension of validity is subject to the same terms and conditions stipulated in the previous Consent to Operate orders/Authorizations already issued by the Board.


1720
(A.V.VENKATACHALAM, I.F.S.,)
CHAIRMAN, TNPCB



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TAMILNADU POLLUTION CONTROL BOARD

AUTHORIZATION No. 1054 DATED: 09 .02.2016.

PROCEEDINGS No. T7/TNPCB/F.12536/CUD/RL/HWM/2016, Dated: 09 .02.2016.

SUB TNPC BOARD – Industries - **M/s. NEYVELI LIGNITE CORPORATION LIMITED, THERMAL POWER STATION-II,** Neyveli Village, Virudhachalam Taluk, Cuddalore District - Authorization for operating a facility for Collection, Storage Transport and Disposal of Hazardous Wastes under Rule 3(b), 5 (4) of Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008 enacted under Environment (protection) Act, 1986 – Reg.

- REF:** 1. Units letter Dated: 26.09.15.
2. IR.No. F. CUD0014/RL/JCEE/TRY/HWM/2015 Dated: 23.10.2015.

In accordance with Hazardous Wastes (Management, Handling & Transboundary Movement) Rules, 2008, authorization is issued to

**The Chief General Manager,
M/s. NEYVELI LIGNITE CORPORATION LIMITED,
THERMAL POWER STATION-II,
Neyveli Village,
Virudhachalam Taluk,
Cuddalore District.**

He shall handle hazardous wastes as specified below.

Sl. No.	Details of process generating hazardous waste as listed in column 2 of Schedule 1 of the amended rules/class of waste as per Schedule 2	Details of Wastes Stream as indicated in column 3 of Schedule 1 / identity of waste as per Schedule 2	Accumulated Quantity of hazardous Waste (Tonnes)	Quantity generated/ handled Tones/Annum	Activity for which authorization is issued
1.	5 Industrial operations using mineral/ synthetic oil as lubricant in hydraulic systems	5.1 Used / Spent oil		175	Collection, Transport & Storage at Common Disposal yard of M/s. Neyveli Lignite Corporation Ltd.

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POLLUTION PREVENTION PAYS

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2.	<p>5.2 Wastes / residues containing oil (Cotton Waste containing oil)</p>	- 250	Collection, Transport & Storage at Common Disposal yard of M/s. Neyveli Lignite Corporation Ltd.
3. 33 Disposal of barrels / containers used for handling of hazardous wastes / chemicals	33.3 Discarded containers / barrels / liners contaminated with hazardous wastes/ chemicals	2000 Nos. /Year	Collection, Transport & Storage at Common Disposal yard of M/s. Neyveli Lignite Corporation Ltd.
4.	33.3 Discarded containers / barrels / liners contaminated with hazardous wastes/ chemicals (Empty carboys)	2500 Nos. /Year	Collection, Transport & Storage at Common Disposal yard of M/s. Neyveli Lignite Corporation Ltd.
5.	33.3 Discarded containers / barrels / liners contaminated with hazardous wastes/ chemicals (HDPE Bags)	1500 Nos. /Year	Collection, Transport & Storage at Common Disposal yard of M/s. Neyveli Lignite Corporation Ltd.
6. 34. Purification and treatment of exhaust air, water & waste water from the processes in this schedule and common industrial effluent treatment plants (CETP's)	34.2 Spent ion exchange resin containing toxic metals	50	Collection, Transport & Storage at Common Disposal yard of M/s. Neyveli Lignite Corporation Ltd.



TAMILNADU POLLUTION CONTROL BOARD

The authorization is issued subject to the terms and conditions specified in Form 2 and special conditions annexed.

Date: 09.02.2016.

**Dr.K. Karthikeyan,
Member Secretary**

//Forwarded by order//

[Handwritten signature]
11/2/16
For Member Secretary

FORM 2

(See rule 5 (4))

FORM FOR GRANT OF AUTHORIZATION FOR OCCUPIER OR OPERATOR FOR HANDLING HAZARDOUS WASTES

1. Number of authorization 1054 and date of issue 09.02.2016.
2. **The Chief General Manager, M/s. NEYVELI LIGNITE CORPORATION LIMITED, THERMAL POWER STATION-II, is hereby granted an authorization for collection, storage, Transport and disposal of hazardous wastes generated by the unit in its premises situated at Neyveli Village, Virudhachalam Taluk, Cuddalore District.**
3. The authorization is granted for generation, collection, storage, Transport and disposal of hazardous wastes.
4. The authorization shall be in force for a period of **FIVE** years from the date of issue.
5. The authorization is subject to the conditions stated below and such conditions as may be specified in the rules for the time being in force under the Environment (Protection) Act, 1986.

Date: 09.02.2016.

POLLUTION PREVENTION PAYS

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TERMS AND CONDITIONS OF AUTHORIZATION:-

- 1) The authorization shall comply with the provisions of the Environment (Protection) Act, 1986 and the rules made there under.
- 2) The authorization or its renewal shall be produced for inspection at the request of an officer authorized by the State Pollution Control Board or Committee.
- 3) The person authorized shall not rent, lend, sell, transfer or otherwise transport the hazardous wastes without obtaining prior permission of the State Pollution Control Board or Committee.
- 4) Any unauthorized change in personnel, equipment or working conditions as mentioned in the application by the person authorized shall constitute a breach of this authorization.
- 5) It is the duty of the authorized person to take prior permission of the (State Pollution Control Board or Committee) to close down the facility.
- 6) An application for the renewal of an authorization shall be made as laid down under these Rules.
- 7) Any other conditions for compliance as per the Guidelines issued by the MoEF or CPCB.

**Dr.K. Karthikeyan,
Member Secretary**

//Forwarded by order//

ADDITIONAL CONDITIONS:

[Handwritten Signature]
For Member Secretary

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11/2/16

1. **The unit shall not incinerate the hazardous waste Category 5.2 (Waste/Residues containing oil (cotton waste containing oil) in the Thermal Power Plant Boiler of NLC without obtaining prior approval from the Central Pollution Control Board & TNPC Board.**
2. The hazardous waste shall be stored in a compatible container on an impervious platform in closed shed to prevent pollution of groundwater and surface soil.
3. The unit shall maintain Form 3 and submit Form 4 prescribed under the Hazardous wastes (Management, Handling and Transboundary Movement) Rules 2008.



TAMILNADU POLLUTION CONTROL BOARD

4. The Hazardous wastes shall be disposed only with manifest that shall be maintained in Form-13 of the Hazardous wastes (Management, Handling and Transboundary Movement) Rules 2008 as amended.
5. The manifest shall be endorsed by the dispatcher, transporter and receiver of Hazardous waste. The endorsed copy of the manifest shall be furnished to TNPCB as and when such disposal is made.
6. The unit shall dispose the used oil which meets the specification as per schedule V of Hazardous wastes (Management, Handling and Transboundary Movement) Rules 2008 to the units having valid authorisation of the Board and registration certificate as recyclers and necessary endorsement shall be made in respect of the quantity transacted in the original letter of registration issued to the recycling unit lifting used oil.
7. The unit shall comply with the general term and conditions stipulated in Form 2 special conditions specified in the authorization order for on site, storage requirements, general packaging requirements, transportation requirements and record keeping and reporting and with the following additional conditions.
8. The unit shall ensure that no cleaning operations of containers /barrels used for storing the used oil are carried out inside the factory premises.
9. The unit shall not store the Hazardous waste generated outside the premises of the unit.
10. The unit shall not store the HSW more than 90 days within the premises.

**Dr.K. Karthikeyan,
Member Secretary**

To

The Chief General Manager,
M/s. NEYVELI LIGNITE CORPORATION LIMITED,
THERMAL POWER STATION-II,
Neyveli,
Cuddalore District,
Tamil Nadu- 607807.

Copy to

1. The Joint Chief Environmental Engineer (Monitoring),
Tamil Nadu Pollution Control Board,
Trichy.
2. BMS
3. Spare

//Forwarded by order//

For Member Secretary

POLLUTION PREVENTION PAYS

சுற்றுச்சூழல் பாதிப்பைத் தடுக்க கழிவுகளை சரியாக கையாள வேண்டும்



TAMIL NADU POLLUTION CONTROL BOARD

SPECIAL CONDITIONS

PART - 1

ON SITE GENERAL STORAGE REQUIREMENTS

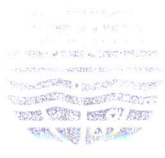
1. Any increase in quantity change in category handling operations shall be brought to the notice of the Board and fresh authorization is to be obtained.
2. The unit may store hazardous waste on site for a maximum period of 90days a maximum quantity of 10,000kgs or a truck load whichever is less.
3. The unit shall not store the hazardous waste on open ground. It shall be stored in closed containers in an isolated area earmarked for the purpose within the premises(it shall not be accessible to rain water)
4. The unit shall mark each container holding the hazardous wastes with marking "Hazardous Wastes" both in English and Tamil. The containers shall be labelled as per the rules prescribed in motor Vehicles Rules, 1989.
5. The storage area should be fenced properly and a sign of danger should be placed at the storage site.
6. The containers holding the hazardous wastes should be kept in good condition and made of materials which can withstand the physical and environmental conditions during storage and transportation.
7. The unit shall provide requisite safety devices like safety mask, goggles, hand gloves, gumboots, fire fighting systems and maintain the same in working condition.
8. The containers holding the hazardous waste should be closed with lids during storage, except when it is necessary to add or remove wastes.
9. Only properly cleaned containers should be used for storage of hazardous wastes.
10. The unit shall notify to the TamilNadu Pollution Control Board in Form -1 at least once in 90 days as per the permitted on site storage period regarding the quantity of waste generated and total accumulated quantity. A containment system should be provided at the area of storage of hazardous waste within three months from the date of issue of authorization. It shall be designed and operated as follows.
 - a) The base underlying the containers should be constructed in such a way that it is free of cracks or gaps and it is sufficiently impervious to contain leaks spills and accumulated precipitation until the collected material is detected and removed.

TAMIL NADU POLLUTION CONTROL BOARD
POLLUTION PREVENTION DEPARTMENT
P.O. BOX 10, CHENNAI 600 020



TAMILNADU POLLUTION CONTROL BOARD

- b) The system should be designed and operated to drain and remove liquids which may result from leak, spillage or precipitation unless the containers are elevated or otherwise protected from contact with accumulated solids.
 - c) The containment system should have sufficient capacity to contain 10% of the volume of containers or the largest container whichever is greater. Containers that do not contain free liquids need not be considered in this determination.
 - d) Run-on into the containment systems should be prevented unless the collection system has sufficient excess capacity in addition to that mentioned in paragraph (c) of this section to contain any run-on which might enter the system.
 - e) The containment should have a sump to collect any leak, spillage or precipitation. Spilled or leaked waste and accumulated precipitation should be removed from sump or collection area timely as it is necessary to prevent overflow of the collection system.
11. a) Containers holding ignitable or reactive waste should be stored at least 15meters (50feet) away from the plant operational area. "No Smoking" signs should be placed conspicuously wherever ignitable or reactive waste is stored.
- b) Container holding the wastes other than ignitable or reactive should be stored at least 6meters (20feet) away from the plant operation area.
12. Special Requirement for Non-compatible Wastes:
Non- Compatible hazardous wastes and materials should not be mixed in the same transportation or storage container.
Hazardous wastes should not be placed in an unwashed container that previously held any chemical material or non-compatible wastes. A storage container holding hazardous waste that is non-compatible with any waste or other materials stored near by in other containers, piles, open tanks or surface impoundments should be separated from other materials or protected from them by means of a dike, beam, wall or other suitable devices.



TAMIL NADU POLLUTION CONTROL BOARD

13. The unit shall analyze the hazardous wastes for the parameters such as specific gravity, percentage solids, chemical composition, flash point, reactivity, toxicity, explosivity, calorific value and bio-degradability whichever is applicable. In addition the leachate generated shall also be analyzed. The report of analysis is to be maintained at the facility.

PART - II

GENERAL PACKAGING REQUIREMENTS

1. Packaging materials and contents shall be such that there will be no significant chemical and galvanic reaction among any of the materials in the package.
2. The closing system shall be adequate enough to prevent inadvertent leakage of contents under normal conditions incident to transportation.
3. Each container must be with its filling holes up and it should be marked "THIS SIDE UP" to indicate the upward position of closures.
4. The packaging should be secure enough to prevent leaks, spills and vaporization during transportation. The hazardous wastes shall be stored in clamp-lid containers. The container should be coated in black paint.
5. It shall be ensured that whenever hazardous wastes are offered for transportation the containers are marked specified under Special Condition 4 of Part -1.
6.
 - a) Containers used more than once(refilled and reshipped after having previously emptied) must be in such condition that they comply in all respects with the prescribed requirements as specified under Special condition 1,2 and 3 above.
 - b) Containers previously used for any hazardous materials having old marking and labels must be thoroughly removed or obliterated before being reused for storing hazardous wastes.
 - c) Containers specified for single trip and non-reusable containers from which contents have been removed must not be used for transportation of hazardous wastes.



TAMILNADU POLLUTION CONTROL BOARD

- d) Each container must be thoroughly cleaned to remove all residues and foreign matters, inspected for defects and deterioration. All closing devices and parts must be removed (if possible), inspected for defects and replaced if necessary.

PART – III

TRANSPORTATION REQUIREMENTS

The unit shall follow the guidelines for transportation as detailed below:

1. a) Containers offered for transportation are to be checked for their suitability and properly labelled as per Motor Vehicle Act, 1988 and rules 1989.
 - b) Ignitable, reactive or non-compatible hazardous wastes may not be transported along with other wastes.
 - c) Approximate number of portable fire extinguishers, safety goggles, gum boots, hand gloves, first aid kits etc., shall be provided.
 - d) Adequate training to the drivers and helpers regarding handling and transportation requirements of hazardous wastes should be provided.
 - e) Necessary special lining, cushioning, shock absorbers etc to be provided to all vehicles engaged in transporting hazardous wastes.
2. Transportation to be done without any delay to deliver the hazardous wastes to the designated facility.
 3. Records pertaining to transportation of hazardous waste shall be maintained.
 4. In an event of accidental spillage of hazardous waste during transit, the driver of the vehicle should follow the instructions issued in TREM card. Also he should intimate the fact immediately to fire brigade station, Police/District authorities about the nature of the accident wherever necessary.
 5. The unit is responsible for taking appropriate steps to clean up spillage occurring during transit as specified in TREM card.
 6. Onsite Emergency Plan to be prepared and furnished to Tamil Nadu Pollution Control Board for storage and transportation of wastes.



TAMIL NADU POLLUTION CONTROL BOARD

PART – IV RECORD KEEPING AND REPORTING

1. Complete record of collection, reception, treatment, storage and disposal of the hazardous waste shall be maintained in Form -3. The records shall be produced to the inspecting officer of the Board as and when required.
2. Annual returns for the facility shall be sent to the Board in Form-4.
3. Any occurrence of accident has to be communicated to the Board in Form-14.
4. Containers holding hazardous waste should be marked as per form 12.
5. Disposal of hazardous waste shall be carried out by operating the manifest in form -13.
6. All consignments of hazardous wastes shall be transported with transport emergency card as specified in Form -11.

Dr.K. Karthikeyan,
Member Secretary

//Forwarded by order//

R.K.M.
11/2/16
For Member Secretary

11/2/16



TAMILNADU POLLUTION CONTROL BOARD

SCHEDULE - A

See rule 3(c) and 5 (5)

(FORM FOR GRANT OF AUTHORIZATION FOR OCCUPIER OR OPERATOR
HANDLING HAZARDOUS WASTES)

1. The industry shall comply with the provisions of the Environment (Protection) Act, 1986 and the Rules hereunder.
2. The Authorization or its renewal shall be produced for inspection at the request of any officer authorized by the State Pollution Control Board.
3. Any unauthorized change in personnel, equipment and working conditions as mentioned in the application by the person authorized shall constitute a breach of this authorization.
4. An application for the renewal for the authorization shall be made as laid down in Rule 5 (G) (II) at least 30 days before the date of expiry of authorization.
5. TNPCB shall renew the authorization after examining the each case on merit subject to the followings:-
 1. On submission of annual return by the occupier or operator of a facility in Form-IV
 2. On evidence of reduction in the waste generation of recycled or reused and
 3. On fulfilment of conditions prescribed in the authorization regarding management of waste in an environmentally sound manner.
6. All the hazardous wastes should be stored in a secured way so that they do not cause leachate problem or are carried away with run off water during rains.
7. The occupier shall demarcate secured storage area with a sign board including the name of hazardous waste.
8. First Aid box, Masks, Fire control equipment and other safety devices shall be provided to meet emergency situations.
9. The occupier shall educate the workers and nearby public of possible accidents and remedial measures.
10. For any accident or spillage of hazardous wastes causing damage to the Environment, the occupier or the transporter as the case shall be held responsible.

TAMILNADU POLLUTION CONTROL BOARD

11. In case of closure of industry, the unused not consumed raw materials falling under the category of Hazardous Chemicals Rules, 1989 and Amendment Rules, 2000 shall be removed and sold to other units within 90 days from the date of closure to prevent any possibility of occurrence of an accident. In case the above hazardous chemicals have lost their properties originally required, then they shall be treated as Hazardous Waste and they should be disposed off only to the authorized agencies of TNPCB as in a safe manner.
12. The occupier shall prepare/update an emergency preparedness plan for safe handling of hazardous waste from time to time and submit the same to TNPCB. Emergency preparedness plan must be implemented immediately whenever there is fire, explosion or release of hazardous waste or hazardous waste constituents, which could endanger to human health or environment.
13. The occupier shall maintain inventory of hazardous wastes, in FORM-3 of the Hazardous Waste Management Rules, 2008.
14. The occupier shall submit annual return to TNPCB in FORM -4 of the Hazardous Waste Management Rules, 2008.
15. The occupier shall submit information on any accidents that have occurred in handling of hazardous waste to TNPCB in FORM -5 of the Hazardous Waste Management Rules, 2008.
16. The occupier or operator of facility shall ensure that the Hazardous Wastes are packed based on the composition in a manner suitable for handling storage and transport and labeled accordingly. The labelling and packing shall be clearly visible and be able to withstand physical conditions and climatic factors.
17. Packaging, labelling and transport of Hazardous Wastes shall be in accordance with the provisions of the rules issued by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time. The packaging and labeling shall be based on the composition and hazardous constituent of the waste, however all Hazardous Wastes containers should be provided with a general label.
18. A driver who transports Hazardous Waste should be well acquainted about the procedure to be followed in case of emergency during transit. The transporter shall carry a Transport Emergency (TREM) card (as given in the guidelines for management and handling of hazardous wastes) duly filled by the Hazardous Waste generator.



TAMILNADU POLLUTION CONTROL BOARD

19. Any Environment damage due to indiscriminate disposal of hazardous Waste shall be assessed by the appropriate authority. The cleanup costs shall be recovered from the generator/Operator/Occupier/ transporter of the said Hazardous Wastes.
20. The industry shall maintain the 'Six copy Manifest System' for the movement of wastes. "The manifest copies should be furnished to the TNPCB, Guindy, Chennai-32 under intimation to the concerned District Office.
21. Safe/Secure storage facility should be provided to all recyclable solids/liquids till they are processed.
22. Industry should maintain good housekeeping with respect to all solid wastes, liquid wastes and effluents.
23. No hazardous Waste shall be mixed with any other waste or shall be discharged to a common, other internal, external sewerage or other drainage system without prior approval of TNPCB.
24. If HDPE bags are used for storing Hazardous Wastes, it should be ensured that they are perfectly sealed mechanically or double hot sealed.
25. If MS/HDPE bags are used for storing Hazardous Wastes, the drums/bags should be ensured that they are perfectly sealed.
26. The Hazardous Wastes packed in HDPE bags or MS/Plastic drums should be stored in a covered shed on a raised platform with leachate management system
27. The industry shall follow the Guidelines for setting up of operating facility for Hazardous Waste management published by CPCB (documents series Hazardous/II/98-99).
28. Tamil Nadu Pollution Control Board reserves the rights to review, impose additional condition or conditions, revoke, change or alter the terms and conditions of this authorization. Also the Board reserves the right to withdraw the authorization without any prejudice/Notice on receiving any complaints by the Board regarding Environmental Pollution problems caused by the industry.
29. The person authorized shall not rent, lead, sell transfer their industries premises without obtaining prior permission of State Pollution Control Board.
30. The authorized person shall take prior permission of the State Pollution Control Board to close down their Hazardous Waste facility.



TAMILNADU POLLUTION CONTROL BOARD

31. The industry shall dispose/sell recyclable wastes such as waste/used oil, used lead acid batteries and non ferrous metal scrap to only the Agencies/Industries with are having valid Authorization of TNPCB and valid registration of CPCB, GOI.
32. The industry shall comply with the provisions of Batteries (Management and Handling) Rules, 2001.

SCHEDULE -B

See rule 3(c) and 5 (5)

(FORM FOR GRANT OF AUTHOPRIZATION FOR OCCUPIER OR OPERATOR HANDLING HAZARDOUS WASTES)

1. Industry shall give top priority to waste minimization and cleaner production practices. Industry shall submit action plan for minimization of hazardous wastes within three months from the date of issue of the authorization.
2. Industry shall dispose the hazardous wastes (mentioned in Form-2) to only the recycling industries, which have registered with Ministry of Environment and Forests, Government of India as "Actual user with ESM. If the waste is disposed to industries which are not having valid authorization of TNPCB and not registered with CPCB, GOI then, industry is liable for legal action under Environment (Protection) Act.
3. Industry shall maintain good housekeeping & maintain proper records for Hazardous Wastes stated in Authorization (Form-2).
4. The industry shall submit the condition wise compliance report of the conditions stipulated in Schedule A and Schedule B of this Authorization half-yearly basis to Board Office, Chennai and concerned District Offices.

**Dr.K. Karthikeyan,
Member Secretary**

//Forwarded by order//


For Member Secretary

17/2/16

POLLUTION PREVENTION PAYS

சுற்றுச்சூழல் மாசுபாடு தடுக்க கட்ட வேண்டும்

STATEMENT OF STATUTORY COMPENSATION PAID - TS II FIRE ACCIDENT ON 01/07/2020									
Sl. No.	Name	Nature of Employment	Date of Birth	Age As On 01-07-2020	Wages	(In. Rs)			
						Employee Compensation	Employee Deposit Linked Insurance (EDLI)	Gratuity	Total
1	2	3	4	5	6	7	8	9	(7+8+9)=10
Deceased									
1	Sivakumar.G	NLCIL Employee	10/4/1967	53	140363	1070100	602000	2000000	3672100
2	Ravichandran C	NLCIL Employee	15/5/1970	50	65380	1148175	602000	980700	2730875
3	Vaithyanathan A M	NLCIL Employee	4/1/1972	48	92249	1198500	602000	2000000	3800500
4	Jothiramalingam V	NLCIL Employee	10/7/1972	47	100641	1223025	602000	2000000	3825025
5	Suresh R	NLCIL Employee	26/12/1970	49	89274	1173525	602000	2000000	3775525
6	Ravichandran K*	NLCIL Employee	2/5/1964	56	73107	0	0	0	0
7	Selvaraj G	Indcoserve Society	4/5/1969	51	15501	0	0	241461	241461
8	Elangovan T	Howcos Society	5/4/1971	49	15501	0	0	250404	250404
9	Anandapadmanabhan T	Indcoserve Society	1/1/1976	44	15501	0	0	232518	232518
10	Ramanathan D	Private Contract	7/4/1974	46	15501	0	0	0	0
11	Nagaraj P	Private Contract	7/5/1978	42	15501	0	0	0	0
12	Silambarasan S	Private Contract	7/9/1995	24	15501	0	0	0	0
13	Arunkumar S	Private Contract	9/6/1994	26	15501	0	0	0	0
14	Venkatesaperumal K	Private Contract	5/4/1992	28	15501	0	0	0	0
15	Padmanaban K	Private Contract	4/11/1991	29	15501	0	0	0	0
Total						5813325	3010000	9705083	18528408
Column No. 7: Under section 4 (a) of Employees` Compensation Act, 1923, an amount equal to fifty per cent. of the monthly wages of the deceased employee multiplied by the relevant factor.									
Column No. 8: Under paragraph 22 (3) (i) of Employee Deposit Linked Insurance(EDLI) Scheme under the Employees` Provident Fund & Miscellaneous provisions Act, 1952 30 times of the last basic salary which was drawn by the employee before death + 50% of the average balance in the member's account or amount during the last 12 months /entire period of his/her membership whichever is lower									
Column No. 9: Under section 4 (1) © of the Payment of Gratuity Act, 1972, In case of death of an employee, the gratuity is paid based on the length of service, where the maximum benefit is restricted to Rs 20 lakh									
*Amount of Rs. 5.0 lakh shown in column 10 was paid as compensatin to injured when Late. K Ravichandran was under treatment.									

STATEMENT OF NON-STATUTORY COMPENSATION PAID - TS II FIRE ACCIDENT ON 01/07/2020												
Sl.No	Name	Nature of Employment	Date of Birth	Age as on 01-07-2020	Wages	In Rs.						
						Compensation-1	Compensation-2	Compensation-3	Group Personal Accident Insurance (GPA)	Death Relief Fund (DRF)	Funeral Expenses	Total
1	2	3	4	5	6	7	8	9	10	11	12	(7+8+9+10+11+12)=13
Deceased												
1	Sivakumar.G	NLCIL Employee	10/4/1967	53	140363	1000000	0	0	1200000	50000	17000	2267000
2	Ravichandran C	NLCIL Employee	5/15/1970	50	65380	1000000	0	0	600000	50000	17000	1667000
3	Vaithiyathan A M	NLCIL Employee	4/1/1972	48	92249	1000000	0	0	600000	50000	17000	1667000
4	Jothiramalingam V	NLCIL Employee	10/7/1972	47	100641	1000000	0	0	600000	50000	17000	1667000
5	Suresh R	NLCIL Employee	26/12/1970	49	89274	1000000	0	0	500000	50000	17000	1567000
6	Ravichandran K*	NLCIL Employee	2/5/1964	56	73107	1000000	50000	500000	0	0	17000	1567000
7	Selvaraj G	Indcoserve Society	4/5/1969	51	15501	0	50000	1772076	0	500000	0	2322076
8	Elangovan T	Howlicos Society	5/4/1971	49	15501	0	50000	1791189	0	500000	0	2341189
9	Anandapadmanabhan T	Indcoserve Society	1/1/1976	44	15501	0	50000	1764887	0	500000	0	2314887
10	Ramanathan D	Private Contract	7/4/1974	46	15501	0	50000	2047273	0	500000	0	2597273
11	Nagaraj P	Private Contract	7/5/1978	42	15501	0	50000	2127407	0	500000	0	2677407
12	Silambarasan S	Private Contract	7/9/1995	24	15501	0	50000	2031756	0	500000	0	2581756
13	Arunkumar S	Private Contract	9/6/1994	26	15501	0	50000	1993688	0	500000	0	2543688
14	Venkatesaperumal K	Private Contract	5/4/1992	28	15501	0	50000	2240139	0	500000	0	2790139
15	Padmanaban K	Private Contract	4/11/1991	29	15501	0	50000	2124190	0	500000	0	2674190
Sub Total - I						6000000	500000	18392605	3500000	4750000	102000	33244605
Injured												
16	Mohan Raj.P	Private Contract	1/5/1994	26	10920	500000	0	0	0	0	0	500000
17	Manikandan.S	Private Contract	3/9/1963	56	15501	500000	0	0	0	0	0	500000
18	Selvakumar.S	Private Contract	7/15/1992	27	15501	500000	0	0	0	0	0	500000
19	Govindan	Indcoserve Society	12/6/1977	43	15501	500000	0	0	0	0	0	500000
20	Jayaseelan.K	Indcoserve Society	5/5/1968	52	15501	500000	0	0	0	0	0	500000
21	Velmurugan.J	Indcoserve Society	1/7/1977	43	15501	500000	0	0	0	0	0	500000
22	Sengamalai.G	Indcoserve Society	4/6/1969	51	15501	500000	0	0	0	0	0	500000
23	Vekatesan.A R	Indcoserve Society	6/5/1978	44	17165	500000	0	0	0	0	0	500000
Sub Total - II						4000000	0	0	0	0	0	4000000
Grand Total (I+II)						10000000	500000	18392605	3500000	4750000	102000	37244605

Statement of Compensation so far paid

Deceased											
Sl.No	Name	Nature of Employment	Gratuity (In Rs.)	Employee Compn. (In Rs.)	EDLI (In Rs.)	DRF (In Rs.)	Funeral (In Rs.)	Solatium -1 (In Rs.)	Solatium-2 (In Rs.)	GPA	Grand Total Subject to Maximum of Rs. 30.0 lakh (In Rs.)
1	Sivakumar.G	Regular	2000000	1070100	602000	1050000	17000	0	0	1200000	5939100
2	Vaithiyathan A.M	Regular	2000000	1198500	602000	1050000	17000	0	0	600000	5467500
3	Jothiramalingam V	Regular	2000000	1223025	602000	1050000	17000	0	0	600000	5492025
4	Ravichandran C	Regular	980700	1148175	602000	1050000	17000	0	0	600000	4397875
5	Suresh R	Regular	2000000	1173525	602000	1050000	17000	0	0	500000	5342525
6	Selvaraj G	Society	241461	0	0	550000		272076	1500000		2563537
7	Anandapadmanabhan T	Society	232518	0	0	550000		264887	1500000		2547405
8	Elangovan T	Society	250404	0	0	550000		291189	1500000		2591593
9	Padmanaban K	Contract	0	0	0	550000		624190	1500000		2674190
10	Venkatesaperumal K	Contract	0	0	0	550000		740139	1500000		2790139
11	Arunkumar S	Contract	0	0	0	550000		493688	1500000		2543688
12	Silambarasan S	Contract	0	0	0	550000		531756	1500000		2581756
13	Nagaraj P	Contract	0	0	0	550000		627407	1500000		2677407
14	Ramanathan D	Contract	0	0	0	550000		547273	1500000		2597273
15	Ravichandran K	Regular	0	0	0	1050000	0	0	500000		1550000
Sub Total -A											51756013
Injured											
Sl.No	Name	Nature of Employment	Gratuity (In Rs.)	Employee Compn. (In Rs.)	EDLI (In Rs.)	DRF (In Rs.)	Funeral (In Rs.)	Solatium -1 (In Rs.)	Solatium-2 (In Rs.)		Grand Total Subject to Maximum of Rs. 5.0 lakh (In Rs.)
16	Selvakumar.S	Contract	0	0	0	0	0	0	500000		500000
17	Sengamalai.G	Indcoserve	0	0	0	0	0	0	500000		500000
18	Jayaseelan.K	Indcoserve	0	0	0	0	0	0	500000		500000
19	Velmurugan.J	Indcoserve	0	0	0	0	0	0	500000		500000
20	Govindan	Indcoserve	0	0	0	0	0	0	500000		500000
21	Vekatesan.A R	Indcoserve	0	0	0	0	0	0	500000		500000
22	Manikandan.S	Contract	0	0	0	0	0	0	500000		500000
23	Mohan Raj.P	Contract	0	0	0	0	0	0	500000		500000
Sub Total -B											4000000
Grand Total (A+B)											55756013

From
Thiru.Chandrasekhar Sakhamuri, I.A.S.,
District Collector,
Cuddalore District,
Tamilnadu.

To
Central Pollution Control Board,
Regional Directorate (Chennai),
Second Floor, 77-A,
South Avenue Road,
Ambattur Industrial Estate,
Chennai - 600058.

L.No.C3/10889/2020 dt.29.09.2020

Sir,

Sub: Cuddalore District - O.A.108/2020 - Suo Motu taken by National Green Tribunal - NLC Boiler explosion Case - Sending Compensation details - Reg.

Ref: 1. Notice of hearing dt. 02.07.2020 received from Deputy Registrar (Judicial), National Green Tribunal, New Delhi.
2. National Green Tribunal Orders in O.A.No.108/2020 dt:08.07.2020.
3. The CPCB L.No.CPCB/RDC/NGT108 (2020) / NLC/ 20-21/284, dated:14.07.2020.
4. E-mail from Thiru. S. Karthikeyan, Nodal Officer, dated:18.09.2020.

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I invite your kind attention to the references cited.

With regard to the reference 4th cited, I wish to furnish the details of compensation given for the victims of fire accident that occurred in Unit NO.5 of M/s NLC India Ltd. Thermal Power Station-II on 01.07.2020 as follows.

A. Compensation given by the Tamil Nadu State Government under chief Minister's relief fund **(Annexure-1)**

A Total Compensation amount of Rs. 42,00,000 was disbursed for Legal heirs of 14 deceased Persons. A separate Proposal has been sent to Government for death of one Thiru. K Ravichandran who died on 04.08.2020 after the disbursement of above amount and a proposal has also been sent for compensation to 8 injured persons.

B. Compensation disbursed by NLC India Limited. **(Annexure-2)**

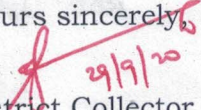
(i)	Total Amount of compensation disbursed by the NLC India Limited for death of 15 persons	- Rs.5,17,73,013
(ii)	Total amount of compensation disbursed by the NLC India Limited for 8 injured persons	- Rs. 40,00,000
	Total	- Rs.5,57,73,013

C. Restitution of the damaged property and environment - No Remarks to offer.

I wish to state that as per the orders of the National Green Tribunal in O.A.No.108/2020, an amount of Rs.5,00,00,000 (Rupees Five Crore only) was deposited by NLC India Limited in the SB Account of the District Collector, Cuddalore on 21.07.2020. As on date Rs.5,57,73,013 had been disbursed to the victims and the legal heirs of the deceased by NLC India Limited. The final quantification of the compensation may be discussed in the next sitting of committee. The details of compensation disbursed is given in Annexure 1 & 2.

Encl: As above.

Yours sincerely,


29/9/20
District Collector
Cuddalore.


29/9/20

Details of Compensation Given to deceased Person's Family
under Tamil Nadu Chief Minister's Relief Fund

S.No.	Name of Victim	Nature of Employment	Total Compensation Paid
1	Thiru.G.Sivakumar	NLCIL Employee	300000
2	Thiru.C.Ravichandran	NLCIL Employee	300000
3	Thiru.M.Vaidyanathan	NLCIL Employee	300000
4	Thiru.V.Jothiramalingam	NLCIL Employee	300000
5	Thiru.R.Suresh	NLCIL Employee	300000
6	Thiru.K.Ravichandran	NLCIL Employee	*
7	Thiru.G.Selvaraj	Indcoserve Society	300000
8	Thiru.T.Elangovan	Howiscos Society	300000
9	Thiru.T.Anandapadmanaban	Indcoserve Society	300000
10	Thiru.D.Ramanathan	Private Contract	300000
11	Thiru.P.Nagaraj	Private Contract	300000
12	Thiru.S.Silambarasan	Private Contract	300000
13	Thiru.S.Arunkumar	Private Contract	300000
14	Thiru.K.Venkatesa Perumal	Private Contract	300000
15	Thiru.K.Padmanaban	Private Contract	300000
Grand Total			4200000

* Regarding death of Thiru.K.Ravichandran a Proposal has been sent to Government for payment of Compensation and the same is awaited.

Injured –Compensation for injured persons proposal sent to Govt. for sanction and GO Awaiting.

COMPENSATION GIVEN BY NLC INDIA LIMITED**Details of Compensation Given to deceased Person's Family**

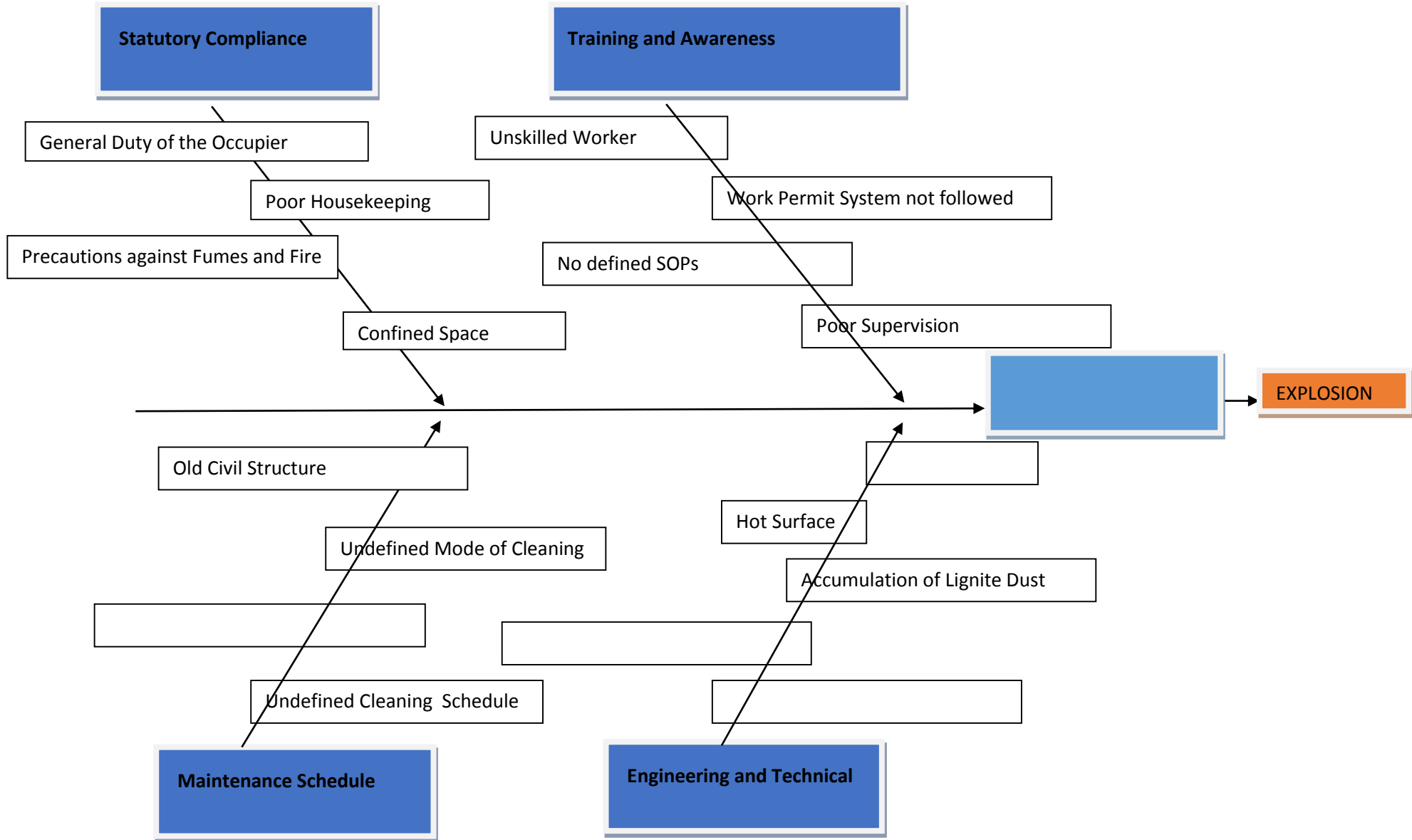
S. No.	Name of Victim	Nature of Employment	Compensation		Total Compensation Paid
			Statutory	Non Statutory	
1	Thiru.G.Sivakumar	NLCIL Employee	3672100	2267000	5939100
2	Thiru.C.Ravichandran	NLCIL Employee	2730875	1667000	4397875
3	Thiru.M.Vaidyanathan	NLCIL Employee	3800500	1667000	5467500
4	Thiru.V.Jothiramalingam	NLCIL Employee	3825025	1667000	5492025
5	Thiru.R.Suresh	NLCIL Employee	3775525	1567000	5342525
6	Thiru.K.Ravichandran	NLCIL Employee	0	1567000	1567000
7	Thiru.G.Selvaraj	Indcoserve Society	241461	2322076	2563537
8	Thiru.T.Elangovan	Howiscos Society	250404	2341189	2591593
9	Thiru.T.Anandapadmanaban	Indcoserve Society	232518	2314887	2547405
10	Thiru.D.Ramanathan	Private Contract	0	2597273	2597273
11	Thiru.P.Nagaraj	Private Contract	0	2677407	2677407
12	Thiru.S.Silambarasan	Private Contract	0	2581756	2581756
13	Thiru.S.Arunkumar	Private Contract	0	2543688	2543688
14	Thiru.K.Venkatesa Perumal	Private Contract	0	2790139	2790139
15	Thiru.K.Padmanaban	Private Contract	0	2674190	2674190
Grand Total			18528408	33244605	51773013

COMPENSATION GIVEN BY NLC INDIA LIMITED

Details of Compensation Given to Injured Persons

S.No.	Name of Victim	Nature of Employment	Amount of Compensation in Rupees
1	Thiru.P.Mohanraj	Private Contract	500000
2	Thiru.S.Manikandan	Private Contract	500000
3	Thiru.S.Selvakumar	Private Contract	500000
4	Thiru.K.Govindan	Indcoserve Society	500000
5	Thiru.K.Jayaseelan	Indcoserve Society	500000
6	Thiru.J.Velmurugan	Indcoserve Society	500000
7	Thiru.G.Sengamalai	Indcoserve Society	500000
8	Thiru.R.Venkatesan	Indcoserve Society	500000
Grand Total			4000000

Ishikawa Fishbone Diagram





B-29014/IPC-I/ MSIHC/2020

The Member Secretary
All State Pollution Control Board /Pollution Control Committee
(As per enclosed list)

Sub: Risk studies and strict safety precautions to be taken by the industries dealing with Hazardous Chemicals – Reg.

Sir,

This has reference to the Advisory issued by Central Pollution Control Board to SPCBs & PCCs on `08.05.2020, in view of a few accidents reported in chemical industries, which started their operations after prolonged lockdown due to COVID 19 pandemic (copy enclosed for ready reference).

SPCBs/PCCs were requested to ensure compliance with the stipulated provisions of The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 and The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996. However, accidents involving chemical spillage, release of gases, fire, etc. have been reported in the recent past in industrial units, namely M/s Hemani Industries Limited, Ankleshwar, Gujarat, M/s Unicharm India Pvt. Limited, GIDC Sanand, Ahmedabad, Gujarat, Yashasvi Rasayan Pvt. Limited, Bharuch, Gujarat, M/s Jay Chemicals, Khambhat, Anand, Gujarat and M/s Sainor Life Sciences, Vishakhapatnam, Andhra Pradesh.

In view of the above, all SPCBs/PCCs must ensure that industries do not operate/restart their operation without valid Consent to operate (CTO) and taking adequate measures to prevent accidents and comply with all the provisions of E(P) Act,1986, Air Act,1981 and Water Act,1974. In case of accidents releasing pollutants in the environment, SPCBs/PCCs shall monitor environmental quality for relevant parameters & duration to assess environmental impacts and damage. They shall also recover environmental compensation towards damage and restoration.

Yours faithfully


(Prashant Gargava)
Member Secretary

B-29014/IPC-I/ MSIHC/2020

May 08,2020

To

The Chairman

All State Pollution Control Board /Pollution Control Committee
(As per enclosed list)

Sub: Strict safety precautions to be taken before resuming operation of units – Reg.

Sir,

Some serious cases of chemical leakages, industrial mishaps have been reported recently. In view of this, all State Pollution Control Boards (SPCBs) and Pollution Control Committees (PCCs) should ensure immediate compliance of the following:

- 1) A proper safety and hazard audit should be undertaken by all units before resuming operation. The SPCB/PCCs shall direct all the units that manufacture, store or import hazardous chemicals to resume their operations after COVID 19 lockdown, only after they have taken adequate and necessary steps to prevent the occurrence of any chemical leakage / accident.
- 2) The SPCBs/PCCs shall ensure that pollution control equipment, connectivity of OCEMS with CPCB/SPCB servers, effluent treatment plants including safety equipment and it machineries shall be kept in good operable conditions before resuming operation in present COVID-19 situation.
- 3) The SPCBs/PCCs shall ensure that all the units shall take utmost care in handling hazardous chemical by using trained manpower.
- 4) The SPCBs/PCCs shall closely monitor the situation and ensure that the environmental norms are not violated by any unit.
- 5) The SPCBs/PCCs will direct all such units to ensure safety of workers and residents in vicinity.
- 6) The SPCBs/PCCs shall ensure that any unit involved in the Manufacture, Storage and Import of Hazardous Chemicals shall comply with the stipulated provisions of The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 and The Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996 without fail.

Yours faithfully

(Ravi S. Prasad)
Chairman, CPCB

dc

Item No. 11

Court No. 1

**BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI**

(By Video Conferencing)

Original Application No. 108/2020

News item published in the “Indian Express” dated 01.07.2020 titled
“Tamil Nadu Neyveli boiler blast: 6 dead, 17 injured”

Date of hearing: 08.07.2020

**CORAM: HON’BLE MR. JUSTICE ADARSH KUMAR GOEL, CHAIRPERSON
HON’BLE MR. JUSTICE S. P. WANGDI, JUDICIAL MEMBER
HON’BLE DR. SATYAWAN SINGH GARBYAL, EXPERT MEMBER
HON’BLE DR. NAGIN NANDA, EXPERT MEMBER**

Respondent(s): Mr. Rajkumar, Advocate for CPCB
Mr. S. Arjun Suresh, Advocate for M/s Neyveli Lignite
Corporation India Ltd.
Mr. Jayanth Muthuraj, AAG for State of Tamil Nadu and TNPCB

ORDER

1. Proceedings in this matter were initiated on the basis of a news item the “Indian Express” dated 01.07.2020 titled “Tamil Nadu Neyveli boiler blast: 6 dead, 17 injured”. Advance notice was issued to the Tamil Nadu Pollution Control Board (TNPCB), Central Pollution Control Board (CPCB), District Magistrate & Collector, Cuddalore, M/s Neyveli Thermal Power Station (NLCIL), Cuddalore and the Director of Industrial Safety and Health Department, Tamil Nadu.

2. TNPCB has filed a report of the fire accident. The report mentions that the industry has seven boiler units to produce electric power of 1470 MW. In the fire accident, six persons died and 17 were injured on 01.07.2020 at about 09:45 A.M. The industrial unit formed a committee to investigate the fire accident. The Director, Industrial Safety and Health

also investigated the matter on the day of the fire accident. The TNPCB was sensitizing the industries in general for maintenance & safety and maintenance of pollution control equipment etc. The boiler of the unit 5 was under shut down for maintenance and further inspection was done by the TNPCB on 03.07.2020 and it was observed:

“

- *The boiler of the unit 5 was under shut down on 30.06.2020 at 9.30 Hrs. for maintenance due to slag conveyor problem.*
- *The maintenance work was started in unit - 5 at 7.00AM on 01.07.2020 with cleaning of the boiler floor area and the supporting steel structures.*
- *It was reported by officials of NLCIL that the **cleaning of lignite dust deposition inside the horizontal box girder might had been done with the help of metal scrappers and due to friction the lignite particles got ignited and due to combustion within the girder, the workers who were inside might had suffered and suffocation leading to fatal and the actual happening of the fire accident under detailed investigation by the committee formed by the NLCIL.***
- *The industry had stopped the operations of four boiler units 4, 5,6 and 7 after the fire accident.*
- *Because of this fire accident no toxic gases were evolved and no damage is caused to the Public i.e. No adverse impact on the ambient due to fire accident is envisaged. However, AAQ survey was conducted in the vicinity of the industry by AEL, TNPCB, Cuddalore from 3.7.2020 & 4.7.2020 and the report is awaited.”*

3. The NLCIL has also filed a reply statement *inter alia* stating as follows:

- “7. NLCIL submits that on the fateful day of 01.07.2020, a fire broke into Unit -5 of the Thermal Power Station -II, and the events preceding the unfortunate incident on 01.07.2020 is submitted as under:
- a. On the night of 29th June 2020, there was Heavy Slag Discharge resulting in frequent tripping of Slag Conveyor throughout the night and consequently slag accumulation inside the Slag Bath. On 30th June 2020 at 07:00 hrs, Slag Bath load was cleared by

intermittent operation of Slag Conveyor and After Burning Grates (ABG). The accumulated load of Slag was also subsequently cleared. Thereafter, the A and B series of Forced Draught fans and Induced Draught fans of the unit were started for forced cooling of the boiler so as to enable the maintenance team to attend to the repairs.

- b. It is submitted that during the maintenance related activity of the relevant boiler on 01.07.2020, at 09:53hrs, a loud sound was heard from the Boiler area, and a fire broke out from the boiler support structures, where the cleaning works were being carried out, resulting in injuries to the services and maintenance team comprising of one Executive, four Supervisors, one Non-Executive employee of NLCIL and seventeen contract workmen. Out of the twenty-three injured persons, six workmen belonging to a contractor unfortunately succumbed to injuries on the spot. The rest of the seventeen injured were immediately rushed to NLCIL Hospital of whom sixteen of them, after initial assessment and treatment, were immediately rushed to Apollo Hospitals, Chennai for higher specialty treatment and one persons with minor injuries is being treated in NLCIL Hospital.*
8. *It is humbly submitted that, the executives, supervisors and non-executives involved in operation and maintenance of Boiler of Unit-V are well trained in the Standard Operating Procedure and they are subjected to refresher course from time to time. The workmen of Contractors who are deployed by the respective Contractors for maintenance works are also well trained in work and safety. It is also submitted that all the standard procedures and practices were followed from 29-06-2020 to 01-07-2020 while taking all necessary precautions.*
9. *On the occurrence of this incident, an Assistant Engineer from Tamilnadu Pollution Control Board [TNPCB], Cuddalore had inspected the incident site in the evening and the sequence of incidents were informed to him. On 03.07.2020, Joint Chief Environment Engineer of TNPCB, Tiruchirappalli, and District Environment Engineer/Cuddalore had conducted the statutory inspection of Thelinal Station -II incident site and units.*
10. *Further on the same day i.e. 03.07.2020, the Assistant Director/Advanced Environmental Lab/TNPCB, Cuddalore and his team had conducted the Ambient Air Quality Survey for testing the Quality of Air, at 6 locations in and around the Thermal Power Plant. It is also relevant to state that on the date of incident, the Deputy Director of Boilers/Neyveli Circle had inspected the said Boiler and*

furnished a report stating that the Boiler is intact (Attached as Annexure-II).

11. *It is further submitted that the Additional Director, the Joint Director from Directorate of Industrial Safety and Health, Tamil Nadu had also inspected the incident site and a closure notice was served on Unit-5. (Attached as Annexure-III).*
12. *It is humbly submitted that, apart from protecting the environment and taking all measures and efforts in maintaining the ecological balance, NLCIL is adopting the guidelines issued by Central Pollution Control Board (CPCB) and TNPCB strictly. Ambient Air Quality Monitoring work is being carried out in thirteen locations in and around Neyveli (Vadakuṭṭhu, Vadalur, Periakurichi, Umangalam, Muthanai. Block-8, Block-6 Block-2, Sathapadi, Kulakudi, Vadakkuvellore, Ka_minapurarn, Chinnakappankulam) to record AAQM parameters such as PM10, PM 2.5, 502, and NOX.*

Special monitoring works of AAQM survey in all the three Mines for Directorate General of Mines Safety and in Thermal Water treatment plant and sewage treatment plant for Occupational Health Safety and Sustainability are carried out periodically. Continuous Ambient Air Quality monitoring is carried out in CARD from 20-062011 for monitoring the PM-10, PM-2.5, SOx, NOx, CO, and Meteorological data Temperature, wind speed, wind direction, Rain, Relative Humidity which is also uploaded onto Care —Air Centre Tamil Nadu Pollution control Board, Chennai through BSNL ILL.

NLCIL has installed 13 permanent Ambient Air Quality (AAQ) Stations in and around the Industrial Units, Residential Colony and peripheral areas of Neyveli, and is continuously monitoring the pollutants like SPM, SOx and NOx for 24 hours on alternate days throughout the year. It is submitted that this is being maintained by IIT, Chennai. It is relevant to state that the AAQ parameters are within limits when compared to the CPCB standards.

14. *Respirable dust samples are collected using Gravimetric dust samplers of Caseella make, UK and analysed periodically to ensure that the dust concentration limit is contained within the allowable limits. One On-Line Continuous Monitoring Ambient Air Quality Station with all modern facilities is functioning in NLCIL and the results are displayed at 5 prominent locations in the Neyveli Township for the information of the Public.*
15. *In addition to the online based continuous monitoring, the Tamil Nadu Pollution Control Board physically inspects, verifies and monitors the AAQ and Stack emissions once every six months and the measured*

values are well within the norms prescribed. Respirable dust monitoring is made in occupational areas for periodical assessment.

- 16. Stack monitoring is carried out in all the stacks of Five thermal power stations periodically as per CPCB guidelines using portable stack sampling kit to ascertain the emissions from Thermal Stations. Online pollution monitoring equipment's are also provided in the stacks ducts for continuous monitoring of pollutants such as SPM, SO₂ and NO_x. The results are found to be within limits and they are being sent to Central Electricity Authority (CEA), Tamil Nadu Pollution Control Board (TNPCB) and Ministry of Environment and Forest (Mo&EF) regularly as statutory compliance reports.*
- 17. It is respectfully submitted that the incident of 1st July 2020 was most unfortunate and unexpected in spite of taking all the standard precautions to attend to the maintenance activities. It is however submitted that there was no exceedance observed in the parameters being monitored as mentioned above in points 12 to 16. Further, there was no violation of any of the statutory environmental obligations nor was there any consequence to the Environment by virtue of this incident. The trend of ambient air quality for the period from 25/06/2020 to 03/07/2020 is attached as Annexure-IV.*
- 18. It is further submitted that the ecology inside the plant is not disturbed by the incident. (Attached as Annexure-V).*
- 19. As an abundant precaution, the other three Units of Thermal Power Station-II viz., Unit IV, VI and VII have also been shut down with effect from 01-07-2020 for a. through safety audit. It has been decided that only after the report of the full safety audit and committee recommendations, the units will be lighted up for operational activities.*
- 20. NLCIL has appointed a committee consisting of 3 members headed by Sri P.K. Mohapatra, Retired Director/Technical of NTPC to enquire into the cause of the incident and for submitting a report.*
- 21. NLCIL is always committed to comply with all the statutory and environmental norms and rules while running the power plants and is also excavating the lignite through mines.*
- 22. It is submitted that, the incident is purely an untoward incident; however, there was absolutely no harm caused to the environment of the township and surrounding areas. In view of the above, it is humbly submitted that this Reply Statement may be taken on*

record and necessary order be passed by the Hon'ble Tribunal.”

4. The CPCB has filed a note based on a preliminary report of the unit in respect of incidents dated 07.05.2020 and 01.07.2020 as follows:

“ Incident Happened on 01.07.2020

- *Unit-5 having capacity of 210 MW of Thermal Power Station-II (TPS-II) was shutdown for maintenance work at 9.30 hrs on 30.06.2020.*
- *Unit-5 boiler left for cooling.*
- *Next day on 01.07.2020, at 7.00AM, cleaning activities with water was carried out on the boiler floor and structures.*
- *At about 9.45 hrs suddenly explosion followed by fire occurred.*
- *On site, 17 persons got injured and hospitalised. 6 persons were found fatal at the boiler zone at 28 metre level.*
- *It is informed that the Directorate of industrial Safety & Health is carrying out inspection today i.e. 02.07.2020.*

Incident Happened on 07.05.2020

1. *Fire accident occurred in TPS-II, Unit-6*
2. *At 16:41 hrs Unit 6 got tripped due to high furnace pressure.*
3. *In meantime information was received from bunker area that there was fire in the conveyor belt and the vicinity at 32 ML. Bunker filling was being carried out at Unit 6 during that time.*
4. *At 16:47 hours, Unit 5 also got tripped followed by unit 7 due to drum level very low protection.*
5. *The lignite feeding conveyor belt caught fire and about 2 tonnes of lignite loaded in the belt was burnt along with 130 meters length of the belt.*
6. *8 persons were injured and they were rushed to hospital for treatment.*
7. *With great efforts the fire was quenched at about 18:30 hours.*
8. *A committee has been formed to investigate the incident and report yet to receive.*
9. *Directorate of Industrial Safety & Health has issued closure order on 08.05.2020 for unit 6.*
10. *The NLC Officer informed that on 14.05.2020, committee has carried out preliminary investigation through VC.*
11. *4 injured person admitted in hospital died during 08 to 14.05.2020 and remaining 4 persons are undergoing treatment.”*

5. Learned counsel for the TNPCB has stated, on instructions, that there has been death of 13 workers and injury to 10 (07 are still hospitalized and 03 have been discharged).

6. We are of the view that independent verification of facts is necessary. The industrial unit is liable to pay interim compensation on the principle of 'Absolute Liability' as laid down in *M.C Mehta v. U.O.I 1987 1 SCC 395, para 31 & 32*. Learned counsel for the industrial unit has stated that in respect of each death compensation of Rs.30 lacs is contemplated. We are of the view that the amount may be paid as interim compensation pending final assessment. Apart from compensating the heirs of the deceased, injured have also to be compensated. We determine interim compensation for seven injured have already been in hospital for about a week to be Rs. 5 lacs each. For three who are discharged, interim compensation is held to be and Rs. 1 lac each. The industrial unit may deposit the amount of Rs. 5 Crores with the District Magistrate, Cuddalore within two weeks from today to meet claim for compensation as ad hoc arrangement. If any amount has already been paid towards compensation, it may be adjusted on proof being shown to the District Magistrate. The amount of interim compensation may be disbursed by transfer to the bank accounts of the heirs of the deceased and the injured.

7. We constitute an independent committee comprising of the CPCB, TNPCB, District Magistrate, Cuddalore, NEERI and IIT Chennai to visit the site, ascertain facts taking into account the version of the industrial unit and other stake holders and the circumstances and give an independent report on following:

- a. The sequence of events;
- b. Causes of failure and persons and authorities responsible therefor;

- c. The compliance of norms laid down in Technical Guidance Manual for Thermal Power Plants.
- d. Compliance with statutory safety norms including hazard risk management.
- e. Extent of damage to life, human and non-human; public health; and environment – including, water, soil, air;
- f. Steps to be taken for compensation of victims and restitution of the damaged property and environment, and the cost involved;
- g. Remedial measures to prevent recurrence;
- h. Any other incidental or allied issues found relevant.

CPCB will be nodal agency for compliance. The Committee will be at liberty to associate any other individual expert/institution.

The report may be given within three months by email at judicial-ngt@gov.in preferably in the form of searchable PDF/ OCR Support PDF and not in the form of Image PDF. A copy of the report be uploaded on website of CPCB for comments of any affected party.

8. While dealing with somewhat similar situation resulting in death of 11 persons and injury to others on account of leakage of gas at Vishakhapatnam, vide order dated 01.06.2020 in O.A No. 73/2020, *In re: Gas Leak at LG Polymers Chemical Plant in RR Venkatapuram Village, Visakhapatnam in Andhra Pradesh*, the Tribunal issued following directions:

- “
- i. xxx xxx xxx
 - ii. **Restoration plan** may be prepared by a Committee comprising two representatives each of MoEF&CC, CPCB and three representatives of State Government to be named by the Chief Secretary, including the District Magistrate,

Vishakhapatnam and such other concerned Departments within two months from today. MoEF&CC will be the nodal agency for the purpose.

- iii. **Final quantification of compensation** may be assessed by a Committee comprising representatives of MoEF&CC, CPCB and NEERI. The said Committee will be at liberty to associate/co-opt any other expert institution or individual. The Secretary, MoEF&CC may ensure constitution of such Committee within two weeks from today. The Committee may give its report within two months thereafter. MoEF&CC will be the nodal agency for the purpose.
- iv.
- v. In view of the stand of the State PCB and the Company that it will not recommence its operation without requisite statutory clearances, we direct that if any such statutory clearances are granted and the Company proposes to recommence, this aspect must be brought to the notice of this Tribunal so that compliance of law is ensured.
- vi. The MoEF&CC may also constitute an Expert Committee to suggest ways and means to revamp monitoring mechanism to check and prevent violation of environmental norms and preventing any such recurrence in future in any of the establishments dealing with hazardous chemicals. A special drive may be initiated in this regard. An action taken report may be furnished within three months from today.
- vii. **This order will not prejudice any criminal or other statutory proceedings in accordance with law.”**

9. Consistent with the above, the Committee may also prepare restoration plan and finally quantify the compensation required to be paid. The Chief Secretary, Tamil Nadu may identify and take appropriate action against person responsible for failure of statutory regulatory framework. The TNPCB may ensure that the unit does not commence its operations unless all safety precautions are taken. The Committee constituted by the MoEF&CC in the said case may take into account the present incident also in the course of preparing its report to be furnished in the said case.

A copy of this order be sent to the Chief Secretary, Tamil Nadu, TNCPB, CPCB, District Magistrate, Cuddalore, MoEF&CC, NLCIL, NEERI and IIT Chennai by email for compliance.

List for further consideration on 03.11.2020.

Adarsh Kumar Goel, CP

S. P. Wangdi, JM

Dr. Satyawan Singh Garbyal, EM

Dr. Nagin Nanda, EM

July 8, 2020
Original Application No. 108/2020
AK