

NATIONAL TRANSMISSION AND DESPATCH COMPANY



NTDC SPECIFICATION

DDS-11:2023

INSULATED BUCKET MOUNTED UTILITY VEHICLE

**Office of the Chief Engineer
(Standards & Specifications) NTDC,
1st Floor PIA Tower, Egerton Road, Lahore**



CONTENTS

0	FOREWORD.....	4
1	REFERENCE STANDARDS	4
2	DEFINITIONS	5
3	GENERAL	7
4	PEDESTAL	8
5	OUT RIGGERS	8
6	TURN TABLE	8
7	BOOMS.....	8
8	ADDITIONAL ACCESSORIES	9
9	DESIGN REQUIREMENTS.....	9
10	CONTROLS	9
11	SECURING DEVICES.....	10
12	INSULATING BUCKET	11
13	HYDRAULIC SYSTEM	11
14	STABILITY	12
15	SECURITY FEATURES	12
16	WARRANTY.....	13
17	TRAINING.....	13
18	STANDARD COLOUR	13
19	MARKING	13
20	PROTOTYPE APPROVAL	14
21	INSPECTION	15
22	PRECAUTIONS FOR OPERATORS	16
23	MAJOR SPECIFICATIONS OF CHASSIS AND AERIAL DEVICE FOR WORKING ON MULTIPLE 11 KV AND BELOW FEEDERS / EQUIPMENT	17
24	INSTRUCTIONS	18
25	ANNEXURE	(i-iv)

Dr. A. Z. Khan
Chief Engineer (Standards & Specifications) NTDC

Page 2 of 18



Printing History:

- 1st Edition DDS-11:1983
- Revised Specification DDS-11:2019
- Amendment No.1 dated 20.01.2020

[Handwritten signature]

Chief Engineer (Standards & Specifications) NTDC

Page 3 of 18

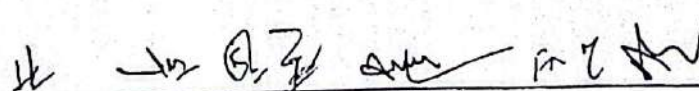
Scanned with CamScanner

**NTDC SPECIFICATION DDS-11:2023****INSULATED BUCKET MOUNTED UTILITY VEHICLE****0 FOREWORD**

- 0.1 This specification has been prepared by the office of Chief Engineer (S&S) NTDC Lahore in consultation with PPMC/DISCOs to fulfil their requirements.
- 0.2 This specification supersedes the previous specification DDS-11:2019 (Amended to-date).
- 0.3 This specification is intended for the procurement of material and does not include provision of the contract.
- 0.4 This standard applies only to position personnel to work on 11kV and below lines/structures/PCC poles. Use of Insulated Bucket Mounted Utility Vehicle/Mobile Elevating Work Platform (MEWP) as a load carrier is not recommended.
- 0.5 This specification is subject to revision as stakeholders and improvement in technology demands.
- 0.6 Insulated Bucket Mounted Utility Vehicle is recommended to be used on dead/de-energized line(s)/equipment having nominal AC voltages 11 kV (rms) or below, at power frequency. Further, before starting the work, all precautionary/safety measures should be taken and ensure that line(s)/equipment are dead/ de-energized and earthed via portable Grounding or earthing switch.

1 REFERENCE STANDARDS

- 1.1 The reference standards for design, manufacturing, supply, testing and operation of Insulated bucket mounted utility vehicle according to requirements shall be as follow:
- Latest International Electrotechnical Commission IEC-61057 (for rated line voltage of aerial device 46 kV (rms) and below) or American National Standard Institute standard ANSI/SAIA A92.2-2015 (Category 'C' for rated line voltage of aerial device 46 kV and below) along with latest BS EN 280 Standard for design and stability calculations.
 - Latest International Electrotechnical Commission IEC-61057 (for rated line voltage of aerial device 22 kV and below) or American National Standard Institute standard ANSI/SAIA A92.2-2015 (Category 'E' for rated line voltage of aerial device 20 kV and below) along with latest BS EN 280 Standard for design and stability calculations.


Chief Engineer (Standards & Specifications) NTDC


Page 4 of 18



The DISCO/ Purchaser shall specify its requirement as per any one of the above applicable standards at the time of tendering and also in its purchase order.

Note:-

All tests mentioned in Clauses-20 and 21 of Specification DDS-11:2023 (amended to date) shall be carried out as per specified requirements laid down in the above mentioned relevant/applicable standards on insulated bucket mounted utility vehicle along with other tests mentioned in the applicable standard specified by the DISCO in its tender document and purchase order.

2 DEFINITIONS

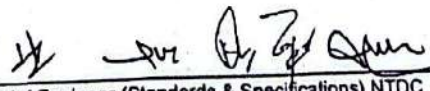
- 2.1 **Aerial Device.** Any device, extensible, articulating, or both, which is primarily designed and used to position personnel. The device may also be used to handle material, if designed and equipped for that purpose.
- 2.2 **Anchorage (s).** A secure point of attachment to be used with personal fall protection (PFP) equipment
- 2.3 **Articulating-Boom Aerial Device.** An aerial device with two or more hinged boom sections.
- 2.4 **Authorized Personnel.** A person(s) approved or assigned to perform a specific type of duty (s) or to be at a specific locations (s) at the job site.
- 2.5 **Boom.** The main structural components of an aerial device that support and elevate the platform and load.
- 2.6 **Conductive Shield (Guard Ring).** A device used to shield the lower test electrode system from capacitive coupling.
- 2.7 **Certification.** A written statement, signed by a qualified person of manufacturer/supplier, verifying that the design, manufacture, installation and testing of the aerial device is in accordance with this standard and as well as ANSI A92.2 / IEC 61057 and BS EN 280 (amended to-date) standards.
- 2.8 **Chassis.** A vehicle on which the aerial device is mounted.
- 2.9 **Chassis Insulating System.** A system of non-conductive (insulating) components installed between the chassis and the structure supporting the upper boom. Such a system, when properly maintained, may provide insulation of the chassis should the portion of the aerial device between the boom and this system inadvertently contact an energized conductor or other apparatus.
- 2.10 **Gradeability.** Ability of a vehicle to climb slopes.
- 2.11 **Instability.** A condition of a Mobile Elevating Work Platform (MEWP) in which the sum of the moments tending to overturn the unit is equal to or exceeds the sum of the moments tending to resist overturning.

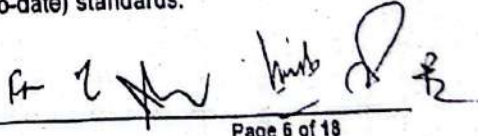

Chief Engineer (Standards & Specifications) NTDC

Page 5 of 18



- 2.12 **Insulated.** Separated from other conducting surfaces by a dielectric substance or air space offering a high resistance to the passage of electrical current and to disruptive discharge through the substance or space. When any object is said to be insulated, it is understood to be insulated in a manner suitable for the conditions to which it is subjected.
- 2.13 **Installer.** A person (s) or entity who mounts an aerial device on a vehicle.
- 2.14 **Insulating Aerial Device.** An aerial device with electric components designed and tested to meet the specific electrical insulating rating consistent with the manufacturer's identification plate.
- 2.15 **Insulating Liner.** An insert made of non-conductive (insulating) material and designed to fit inside the platform.
- 2.16 **Mobile Unit (MEWP).** A combination of an aerial device, its chassis, and related equipment. Mobile unit (MEWP) is equivalent to the term Mobile Elevating WorkPlatform.
- 2.17 **Manufacturer.** A person or entity who makes, builds, or produces an aerial device.
- 2.18 **Operator.** A person trained, authorized, and engaged in the operation of aerial device.
- 2.19 **Override.** The takeover of aerial device movement and winch control functions at the platform controls by the activation of lower control station controls.
- 2.20 **Platform.** The personnel carrying component of an aerial device such as a bucket, baskets, stand, or equivalent.
- 2.21 **Platform Capacity.** The component of rated load capacity consisting of the weight of personnel and all items carried on or in the platform, including the liner.
- 2.22 **Platform Height.** The distance measured at maximum elevation from the bottom of the platform to the ground.
- 2.23 **Platform Reach.** The distance measured horizontally from the centerline of the pedestal (rotation) to the outer edge (rail) of the platform.
- 2.24 **Stowed Position (of the Boom).** The position of the boom on the vehicle where it is intended for non-use and/or transport.
- 2.25 **Supplementary Capacity.** The component of rated load capacity which may be fixed directly to the boom(s), or to load carrying attachments on the aerial device.
- 2.26 **Technical Specification.** A specification often refers to a set of documented requirements to be satisfied by a material, design, product, or service. Technical specification is referred herein as this standard and as well as ANSI A92.2 / IEC 61057 and BS EN 280 (amended to-date) standards.


Chief Engineer (Standards & Specifications) NTDC

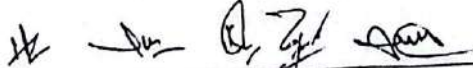

Page 6 of 18

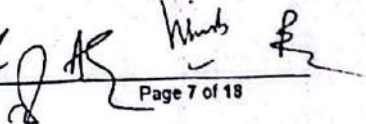


- (9)
- 2.27 **Telescopic Articulating Boom Aerial Device.** An aerial device, except the aerial ladder type, with a telescopic or extensible boom.
- 2.28 **Trainer.** A qualified person who conducts the training of an aerial device/mobile unit (MEWP) operator or service personnel.
- 2.29 **Training.** Instruction to enable the trainee to become a qualified person regarding the task to be performed, including knowledge regarding potential hazards.
- 2.30 **Vehicle.** A carrier for an aerial device also called chassis.
- 2.31 **Voltage.**
- 2.31.1 **Rated Line Voltage.** The nominal phase to phase voltage at which electrical systems are rated.
- 2.31.2 **Design Voltage.** The maximum rated line voltage for which the aerial device has been designed, and for which it can be qualified.
- 2.31.3 **Qualification Voltage.** The rated line voltage for which the aerial device has been actually tested.

3 GENERAL

- 3.1 Insulated bucket mounted utility vehicle (vehicle mounted Aerial platform) shall be a two man hydraulically powered, telescopic articulating type according to the applicable standards (amended to date) referred herein in this specification and available for working on 7.5 meters to 13.72 meters (minimum) working height, and continuous rotation of 360 degrees in both directions (clockwise and anti-clockwise). It will be a rear double wheel drive viz 4x2. The vehicle should have two front seats and control at any suitable place to ensure visibility and safety for the operator. The structure shall be center mounted or at any suitable place that qualifies technical specification especially in respect to stability of the Aerial Platform and should rest with bucket at the backside of the vehicle. The sides of the vehicle shall be having cabinets of appropriate sizes to keep the tools and plants, safety harness belts, first aid box, disconnecting sticks, cutting saw, hydraulic press, spares and other vehicle accessories. One spare tyre be housed at proper place.
- 3.2 The bucket should be in U-frame or should be self-aligning type.
- 3.3 Two adjustable search lights, placed suitably at such a location that these should be in a position to light up working area while working in the bucket during night hours. In addition one portable light shall also be provided. The lights shall be having intensities of 600 lux minimum. Suitable space at the back of the vehicle should be available for the seating of four personnel of line staff.


Chief Engineer (Standards & Specifications) NTDC


Page 7 of 18

**3.4 Service Conditions**

The MEWP shall be suitable for operation in all DISCOs areas.

Ambient Temperature

Maximum 55°C Maximum

Maximum mean over 24 hours 45°C

Mean in a year 39°C

Minimum -10°C

Relative Humidity Range up to 100%

- 3.5** Any additional feature(s) specified by DISCOs/Purchaser in tender and purchase order as per their requirement.

4 PEDESTAL

The pedestal shall be of integrally welded construction and made of steel for supporting turntable, booms and bucket loads. This pedestal is to be designed by the Aerial Platform manufacturer and shall be installed on vehicle chassis frame.

5 OUT RIGGERS

- 5.1** Four (04) Nos. hydraulically controlled out riggers/jacks shall be provided. The height of out riggers should be adjustable independently to vary ground contact areas, when operated. The out riggers shall be H-type with nearest to vertical spread.

- 5.2** An interlock device shall be provided that prevents the boom from being operated from the stowed position until the outriggers have been deployed.

6 TURN TABLE

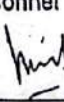
The turn table shall be of welded steel construction having sufficient strength to support booms and bucket loads. The turn table should be rotatable by a hydraulic motor through a worm gear.

7 BOOMS

- 7.1** Both upper and lower booms shall be constructed of high-grade steel, Box/Round Construction capable to qualify all the tests according to the applicable standards (amended to date) referred herein in this specification.

The inner telescopic boom shall be made of Reinforced Fiber Plastic or Polyethylene or any other proper resin for at least a distance of 2 meters from bucket side.

- 7.2** The rotational angle shall be 360 degrees in both directions (clockwise and anti-clockwise). The manufacturer must provide means so that working personnel shall easily get into bucket from the ground.

        
Chief Engineer (Standards & Specifications) NTDC

Page 8 of 18



- 7.3 Hoses and Cables shall be properly protected / concealed inside the booms for maximum protection.

8 ADDITIONAL ACCESSORIES

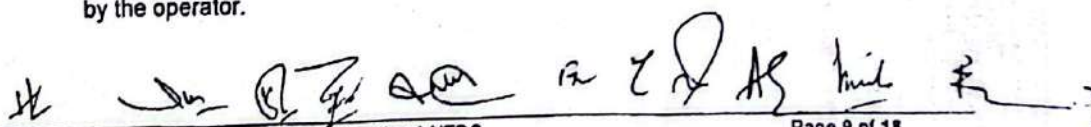
- 8.1 The circular/chain saw hydraulically driven shall be light weight rigged tool which shall be able to handle the heavier work with ease, cut trees or branches upto 150 mm in diameter. The length of the handle shall be 2 to 2.5 meters and its weight shall be 3.5 to 4.5 KGs. Provision to be made by the side of bucket for a suitable bracket to hang the saw. It shall be attach/detachable type with hydraulic plugs provided in the bucket. (The purchaser shall specify the exact type of cutting saw at the time of tendering.)
- 8.2 The manufacture shall establish the provision of hydraulic press (with suitable dies) for the operations related to punching/pressing of dead end bodies, different joints, etc. as specified by the DISCOs at the time of bidding.

9 DESIGN REQUIREMENTS

- 9.1 **Basic Principles.** The design and manufacturing of the insulated Bucket Mounted Utility Vehicle shall conform to the principles laid down in the applicable standards (amended to date) mentioned herein in this specification, which will be specified by the DISCO/Purchaser at the time of tendering and also in purchase order.
- 9.2 **Structural Analysis.** Structural elements of the aerial device which support the platform, the platform itself, and material carrying attachments, if so equipped, shall have a calculated design stress based on the combined rated load capacity and weight of the support structure. The structural analysis shall consider all the effects mentioned in the applicable standards (amended to date) mentioned herein in this specification.
- 9.3 **Stability.** The stability of the aerial device shall conform to the specified requirements laid down in the applicable standards (amended to date) mentioned herein in this specification. There shall be no instability.
- 9.4 **Wind Speed.** The wind forces shall conform to the specified requirements laid down in the applicable standards (amended to date) mentioned herein in this specification.

10 CONTROLS

- 10.1 **General** Aerial devices shall have both upper and lower controls for boom positioning. All controls shall be clearly identifying their function and protected from damage and unintentional actuation. The boom positioning and material carrying attachment controls shall return to their neutral position when released by the operator.


Chief Engineer (Standards & Specifications) NTDC

Page 9 of 18



10.2 **Unlocking or Enabling Device.** The use of an unlocking or enabling device shall precede the use of boom positioning controls. The unlocking or enabling device may be incorporated into each control. A separate control that has to be continuously activated by the operator in order for any motion to take place meets this requirement. Foot controls, if so equipped, shall have slip-resistant surfaces and be easy to clean. The unlocking or enabling device shall return to the locked or disabled position when the control is released by the operator.

10.3 **Visibility at Control Positions.** Any control positions shall allow the operator to see the resulting movements.

10.4 **Upper Controls.** Upper controls shall be in or beside the platform and readily accessible to the operator. On a two-platform aerial device, control operation from either platform shall be accomplished with reasonable ease and without the need to disengage personal fall protection equipment.

In order to protect against unintentional actuation of the boom positioning controls at the platform, the use of an unlocking or enabling device shall precede the use of the control itself. The unlocking or enabling device shall return to the locked or disabled position when the control is released by the operator. The unlocking or enabling device may be incorporated into each control.

10.5 **Lower Controls.** Lower controls shall be readily accessible in all boom positions and shall provide a means to override the boom positioning upper controls provided the upper control system is intact.

The override mode shall maintain its function while unattended. The lower control of insulating aerial devices shall be designed in such a manner that an operator is not placed in the electrical part between the aerial device and ground.

10.6 **Emergency Stop.** An additional control shall be provided at the platform at the lower controls to affect an emergency stop of the powered upper control functions. These controls shall be permanently marked and shall not require continuous actuation for as stop condition. At the lower controls, the override control may be used as an emergency stop provided it is clearly identified as an "emergency stop".

10.7 **Outriggers Control.** When the aerial device is equipped with outriggers controls, these controls shall be guarded to protect against unintentional operation, and shall return to neutral when released by the operator.

The controls shall be located so that the operator can see the outriggers being operated.

11 SECURING DEVICES

11.1 **Boom Securing device.** Aerial devices shall be equipped to ensure that the boom(s) remain in the cradled position during transportation.

Chief Engineer (Standards & Specifications) NTDC

Page 10 of 18



- 11.2 **Platform Security.** Platforms shall be designed to withstand vibration and shock loading during transportation.
- 11.3 **Locking Pins.** Any locking pins shall be secured against unintentional disengagement and loss.

12 INSULATING BUCKET

The bucket(s) shall be made of Reinforced Fiber Glass/ Reinforced Fiber Plastic with lining of moulded thermofuse polyethylene. The manufacturer shall provide a bucket of size (L x W x H) 1.22 x 0.61 x 1.00 meters (with cover) having a rated load of 200 KGs (minimum) (Two persons). Preferably the bucket shall have a hydraulically controlled swinging property with an angle of 60 to 90 degrees on either side. The Insulating bucket shall withstand all the tests according to the applicable standards (amended to date) referred herein in this specification.

13 HYDRAULIC SYSTEM

- 13.1 **Bursting Safety Factors.** All hydraulic components whose failure could result in motion of the platform or material lifting device or both shall have a minimum bursting strength of at least four times the maximum operating pressure for which the system is designed. All other hydraulic components normally rated according to bursting strength, such as hose, tubing, and fittings, shall have a minimum bursting strength of at least three times the operating pressure for which the system is designed. All other hydraulic components normally rated according to performance criteria, such as rated flow and pressure, life cycles, pressure drop, rpm, torque, and speed, shall have a minimum bursting strength of at least two times the maximum operating pressure for which the system is designed. Such components generally include pumps, motors, directional controls, and similar functional components.
- 13.2 **Venting of Air.** The design of the hydraulic system shall allow entrapped air to be vented if required for proper operation
- 13.3 **Reservoir Vent Filter.** Any fluid reservoir vent shall be equipped with a filter.
- 13.4 **Fluid Level Indicators.** Hydraulic reservoirs for the aerial device shall be equipped with a device to indicate the permissible liquid level for normal operation.
- 13.5 **Fluid Cleanliness.** Each hydraulic system shall have means to maintain the fluid cleanliness, necessary level for operation of the system and its components. The manufacturer shall provide necessary instructions for proper maintenance.
- 13.6 **Gas-Loaded Accumulators.** Hydraulic systems shall incorporate gas-loaded accumulators and a means shall be provided to vent the liquid pressure automatically or to isolate positively the accumulator when the system is in the unpressurized state. Duplicate information shall be provided in the maintenance manual.

Chief Engineer (Standards & Specifications) NTDC

Page 11 of 18



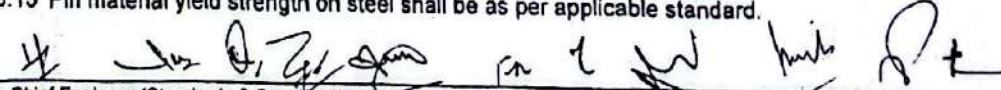
- 13.7 Non-conductive hydraulic hoses to be used in the system.

14 STABILITY

Stability test(s) should be performed as per specified requirements laid down in the applicable standards (amended to date) mentioned herein in this specification.

15 SECURITY FEATURES

- 15.1 Safety relief valve to be included in multi-control valve to prevent over-pressure.
- 15.2 Pilot-operated holding and check valves to be equipped direct on cylinders to prevent cylinder retraction load and hold each cylinder in position in case hydraulic failure occurs.
- 15.3 Boom angle controller to be installed to keep the unit within working range. Emergency lowering mechanism employed to lower the bucket in the event of primary hydraulic power source failure i.e. rotation of turntable to be achieved by rotating the shaft of rotation speed reducer with crank handle. Lowering of upper and lower booms to be performed by bleeding pilot operated holding and check valves.
- 15.4 An operating control in the bucket be designed in such a way that they may be operated only by an intention. They shall return automatically to their off (stop) position as soon as the operator ceases to use them.
- 15.5 A safety ring shall be located at the end of upper boom to anchor operator safety belt.
- 15.6 Warning lights shall be placed underneath the aerial platform on each side and shall start flashing when platform controls are activated. A rotation beacon shall be placed to the side of the turntable which shall start flashing when platform controls are activated.
- 15.7 For detecting nearby energized lines the provision of beeper shall be made.
- 15.8 A way of communication shall be provided between lineman in the bucket and driver/operator.
- 15.9 6 Nos. barricades shall be provided by the supplier.
- 15.10 Light reflectors shall be pasted at suitable places for safe working at night.
- 15.11 A load sensing device shall be provided on platform and as well as on chassis to ensure safe load limits through beep alarms.
- 15.12 Level indicator to be provided for stability.
- 15.13 Insulated upper controls for complete isolation of work platform/buckets.
- 15.14 Boom material sheet yield strength on steel shall be as per applicable standard.
- 15.15 Pin material yield strength on steel shall be as per applicable standard.


Chief Engineer (Standards & Specifications) NTDC

Page 12 of 18

**16 WARRANTY**

The bidder/supplier shall provide 5 years warranty for successful operation of MEWP including its maintenance and spare parts for 2 years (free of cost) wherever required.

17 TRAINING

The successful bidder shall arrange comprehensive training of at least 15 days by a trainer regarding operation and maintenance of Aerial devices including recognition and avoidance of hazards associated with their operation. Such training shall include class room training and on job training. A certificate shall be given to successful trainees on completion of training.

18 STANDARD COLOUR

18.1 Chassis should be ED (Electrophoretic deposition) paint for rust proofing.

18.2 The standard colour requirement for Insulated Bucket Mounted Utility Vehicle shall be as follow:

- i. WHITE colour for aerial device with rated line voltage of 46kV (rms) and below.
- ii. YELLOW colour for aerial device with rated line voltage of 22kV and below or with rated line voltage of 20kV and below.

19 MARKING

19.1 Every vehicle shall be marked/engraved with word "DISCO Name" of suitable size at the following points:

- 1) Bucket
- 2) First section of boom
- 3) Two different locations of the vehicle.

19.2 The manufacturer shall provide an identification Plate(s) to indicate the following minimum information:

- i. Make
- ii. Model
- iii. Insulating or non-insulating
- iv. Qualification voltage and date of test
- v. Serial Number
- vi. Year of manufacturing
- vii. Rated load capacity
- viii. Rated platform height
- ix. Aerial device System Pressure or Aerial Device Control System Voltage or both
- x. No. of Platform
- xi. Size of Tyres
- xii. Category of Insulating Aerial device

Chief Engineer (Standards & Specifications) NTDC

Page 13 of 18



- xiii. Ambient temperature range for which the Aerial device is designed.
xiv. Name and Location of manufacturer
xv. Installer
xvi. Unit equipped with material handling attachment or not.

- 19.3 The identification plate should be made of stainless steel having minimum dimensions 254mm x 203mm and thickness of 0.5mm.
19.4 Clearly visible Category/Voltage Level with minimum size 100 mm shall be printed on upper boom and bucket at suitable locations.

20 PROTOTYPE APPROVAL

- 20.1 The manufacturers/suppliers shall offer the sample along with three sets of drawings of chassis and structure to the office of Chief Engineer (Standards and Specifications) for getting prototype approval. When prototype is offered for first time for each category, the representatives of office of Chief Engineer (S&S) NTDC and Chief Engineer (MI) PPMC will visit manufacturer's premises for verification of Manufacturing, Testing and Assembling facilities/capabilities.
20.2 The offered prototype sample shall be subjected to all but not limited to the following tests as per applicable standards (amended to date) mentioned herein in this specification.

1.	Visual Inspection & Verification of Components
2.	Verification of Hydraulic System and Hydraulic Cylinder
3.	Verification of working of anchorage
4.	Verification of Protection System of Platform or load Motion
5.	Stability Testing
6.	Platform Creep Test
7.	Qualification Test/Dielectric Tests of the upper insulating system
8.	Test for Chassis Insulating System
9.	Test of Insulating Liner of Bucket
10.	Confirmation Test of upper control components with High Electrical Resistance
11.	Electrical Tests for Insulating Aerial Devices. (Before Use Test)

The testing shall be carried out at HV & SC Lab. NTDC Rawat or PCSIR Lab. The testing may also be carried out at any other ILAC/PNAC accredited laboratory subject to the condition that the proficiency testing under ILAC / PNAC certification covers those tests. In any case the prototype testing will be duly witnessed by the office of Chief Engineer (Standards and Specifications) NTDC at the cost of supplier.

- 20.3 All necessary import documents shall be maintained by the supplier/manufacturer in order to ensure the authenticity of the quality of the product and shall be readily available.

- 20.4 The supplier shall also present the certificate from the manufacturer that the complete Aerial Device has been designed, manufactured and tested as per

Chief Engineer (Standards & Specifications) NTDC

Page 14 of 18



- applicable standards (amended to date) mentioned herein in this specification.
- 20.5 The manufacturer shall be having latest OHSAS 18001/45001 safety standard and shall be duly verified by the office of CE (S&S) NTDC during the prototype testing of Aerial Platform.
- 20.6 The manufacturer of Aerial device shall have in-house manufacturing facility and state of the art Laboratory equipped with latest equipment/instruments duly calibrated from PNAC/ILAC accredited Laboratory for in-house/routine testing necessary during and after the final product.
- 20.7 All expenses like testing fee, expenditure incurred for shipment of MEWP from manufacturer's premises to the testing lab., traveling, lodging, boarding and daily allowance of two NTDC Engineers shall be borne by the manufacturer.

21 INSPECTION

- 21.1 The successful bidder/supplier shall offer MEWPs for inspection/testing. The supplier shall have workshop or at least have an agreement with the independent workshops for repair and maintenance work.

21.2 Routine Testing

Routine testing shall be carried out by the office of Chief Engineer (MI) PPMC along with representative of DISCO. Following testing shall be carried out on the units being purchased.

1. Visual Inspection and Verification of Dimensions & Components
2. Stability Testing
3. Qualification Test/Dielectric Tests of the upper insulating system
4. Test for Chassis Insulating System
5. Test of Insulating Liner of Bucket

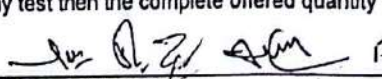
- 21.3 In addition to above tests, following operational test shall also be performed on MEWP to ensure strict compliance with the operational requirements.

1. Booms
2. Elevating and lowering mechanism
3. Boom extension mechanism
4. Rotating mechanism
5. Safety Devices
6. Verification of components as per specification.

- 21.4 Tests mentioned in clause 21.2 and 21.3 shall be carried out at manufacturer/supplier's lab. having testing equipment duly calibrated from ILAC/PNAC accredited lab. or at HV & SC Lab. NTDC Rawat, PCSIR Lab. or any other ILAC/PNAC accredited laboratory at the cost of supplier..

- 21.5 Tests mentioned in clause 21.2 and 21.3 shall be carried out on each manufactured unit. If any unit fails in any test then that unit shall be rejected. If more than one (01) unit fails in any test then the complete offered quantity shall be rejected.


Chief Engineer (Standards & Specifications) NTDC


Page 15 of 18



(18)

21.6 Annual Joint Testing

One (01) No. complete unit shall be randomly selected jointly by representative(s) of office of CE (MI) PPMC and CE (S&S) NTDC from any DISCO's Purchase Order for each category of each manufacturer/supplier once in a calendar year. The selected sample shall be tested at HV & SC Lab. NTDC Rawat, PCSIR Lab. or any ILAC/PNAC accredited laboratory for following tests as per applicable standards (amended to date) mentioned herein in this specification:

1. Stability Testing
2. Qualification Test/Dielectric Tests of the upper insulating system
3. Test for Chassis Insulating System
4. Test of Insulating Liner of Bucket

The testing shall be carried out at the cost of supplier and witnessed by office of CE (MI) PPMC and CE (S&S) NTDC jointly.

If the selected unit fails in any test then the offered quantity shall be rejected and manufacturer/supplier shall offer the same quantity after improvement and the testing process as mentioned above shall be repeated. If the randomly selected unit again fails in any test then the prototype approval shall be considered as invalid and the manufacturer/supplier shall have to obtain new prototype approval from the office of Chief Engineer (S&S) NTDC.

22 PRECAUTIONS FOR OPERATORS

Before and during each use, the operator shall:

- i. Check for overhead obstructions and electrical conductors.
- ii. Maintain adequate clearance from obstructions and electrical apparatus.
- iii. Ensure that the load and its distribution on the platform and/or load lifting device is in accordance with the manufacturer's requirements.
- iv. Ensure that outriggers and stabilizers are used if the manufacturer's instructions require their use.
- v. Use outrigger pads when necessary to provide firm footing.
- vi. Cease operation of the Aerial device and request further information from the user should the operator encounter any suspected malfunction of the aerial device or any hazard potentially unsafe condition.
- vii. If the platform or elevating assembly becomes caught, snagged, or otherwise prevented from normal motion by external obstacles such that control reversal does not free the platform, all personnel should be removed from the platform before attempts are made to free the platform or elevating assembly.
- viii. Before starting the work, all precautionary/safety measures shall be taken and ensure that line (s) /equipment are dead/ de-energized and earthed via portable grounding or earthing switch.


Chief Engineer (Standards & Specifications) NTDC

Page 16 of 18

23

MAJOR SPECIFICATIONS OF CHASSIS AND AERIAL DEVICE FOR WORKING ON MULTIPLE 11 KV AND BELOW FEEDERS / EQUIPMENT

Sr. No.	Description	Aerial Device with Rated Line Voltage of 46 kV and below as per IEC-61057 Standard or ANSI/SAIA A92.2-2015 (Category C) Standard along with latest BS EN 280 Standard	Aerial Device with Rated Line Voltage of 22 kV and below as per IEC-61057 Standard or 20kV and below as ANSI/SAIA A92.2-2015 (Category E) Standard along with latest BS EN 280 Standard
A. Chassis			
1.	Drive type	Right Hand Drive with 4x2 drives with rear dual tyres	
2.	GVWR	8000 kg (minimum)	5000Kg. (minimum)
3.	GAWR (Front)	3000 kg (minimum)	2000 Kg (minimum)
4.	GAWR (Rear)	5500 kg (minimum)	3000 Kg (minimum)
5.	Payload	6000 kg (minimum)	3000 Kg (minimum)
6.	Wheelbase	3800-4100 mm.	3200-3500 mm
7.	Overall Length	6600-6800 mm	5900-6100 mm
8.	Overall Width	2050 mm (maximum)	1850 mm (maximum)
9.	Transmission	5 forward or above and 1 Reverse gears with alarm.	
10.	Engine	Engine shall be "Euro II or PAK II", Turbo charged, 4 cylinder 120 HP (minlimum)	Engine shall be "Euro II or PAK II", Turbo charged with Intercooling mechanism, 4 cylinder 90 HP (minimum)
11.	Clutch Type	Clutch shall be dry with single plate	
12.	Brakes	Equipped with parking brakes in rear wheels	
13.	Fuel Tank (Capacity)	100 liters (min.).	80 liters (min.).
14.	Steering	Power	
15.	Curb/Chassis Weight	2000 Kg (minimum)	
NOTE: Chassis manufacturer shall have at least five years operational experience and have wide network of sales and service/spare parts.			
B. Aerial Platform & Aerial Device			
1.	Working height	15.1 meters (49.5 feet) (minimum)	13.72 meters (45 feet) (minimum)
2.	Platform Capacity (Bucket Capacity)	200 Kg. (minimum)	
3.	Stowed Travel Height	3.65 meters (maximum)	
4.	The aerial platform shall comply with all the requirements as per the applicable standards (amended to date) mentioned herein in this specification.		
5.	The aerial platform shall have ultimate speed, maneuverability and lift capacity; and shall comply with all the requirements as per the applicable standards (amended to date) mentioned herein in this specification.		
6.	Horizontal outreach	8 meters (minimum)	6 meters (minimum)
7.	Lower boom/chassis Insulation System	as per the applicable standards (amended to date) mentioned herein in this specification.	
8.	Platform to ground Package (Facility to lower the platform to the ground for easy access and egress)		
9.	The aerial platform shall be ideal for electric line construction		
10.	Aerial Platform shall have continuous rotation of 360 degrees in both directions (clockwise and anti-clockwise)		
NOTE:			
- Overall length of complete unit shall not exceed the overall length of chassis. - Aerial Platform and Aerial Device manufacturer shall have at least 5 years of manufacturing experience duly supported with the successful performance certificates of at least two independent end-users of insulated bucket mounted utility vehicle.			

Chief Engineer (Standards & Specifications) NTDC

Page 17 of 18

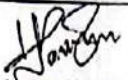
Scanned with CamScanner



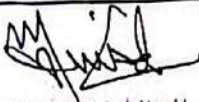
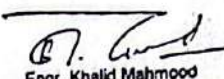
24 INSTRUCTIONS

- 24.1 The Installer shall comply with the applicable standards (amended to date) mentioned herein in this specification relating to proper installation and shall follow the instruction of the manufacturer/supplier/bidder.
- 24.2 Aerial device manufacturer shall comply with all specifications as per applicable standards (amended to date) mentioned herein in this specification.
- 24.3 Purchaser/user shall comply with all instructions as per this specification for inspection, testing/periodic testing, operation and maintenance of MEWP.

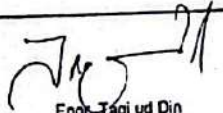
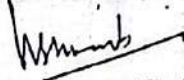
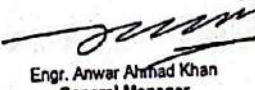
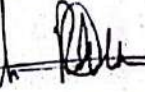
Prepared By:

 Engr. Muhammad Hanan Azam Assistant Manager (D&S)	 Engr. Imran Majeed Deputy Manager (D&S)
---	--

Supervised By:

 Engr. Maqsood Ahmed Manager (D.P)	 Engr. Muhammad Amir Hamid Manager (D.E)	 Engr. Khalid Mahmood Addl. Chief Engineer (D&S)
---	---	--

Recommended By:

 Engr. Malik Zulfikar Hussain Chief Engineer (S&S) NTDC Secretary SRC	 Engr. Taqi ud Din Chief Engineer (P&C) NTDC Member SRC	 Engr. Muhammad Shoaib Chief Engineer (C&M) NTDC Member SRC
 Engr. Farooq Rashid Chief Engineer (PSP) NTDC Member SRC	 Engr. Anwar Ahmad Khan General Manager (Asset Management) North, NTDC Member SRC	 Engr. Dr. Khawaja Riffat Hassan General Manager (D&E) NTDC/ Convener SRC



ANNEXURE

TECHNICAL SCHEDULE DATA

The manufacturer must provide the following technical schedule data as per NTDC specification DDS-11:2023 (Amended to-date) duly filled and signed alongwith the bid:-
INSULATED BUCKET MOUNTED UTILITY VEHICLE

1. Model No. type and name of Manufacturer. _____
2. Category & Applicable Standard _____
3. **Aerial Device**
 - i) Type and place of mounting. _____
 - ii) Turn Table construction _____
 - iii) Rotation of turn table by
(Bucket swing mechanism) _____
 - iv) Rotational angle of turn table _____ deg.
 - v) No. of Booms and height. _____ meters
 - vi) Type of upper boom. _____
 - vii) Material of upper boom _____
 - viii) Articulation/folding angle of
upper boom _____ deg.
_____ (-) deg. to _____ (+) deg.
 - ix) Elevation angle. _____ R.P.M.
 - x) Rotational Speed _____ Kg/Cm²
 - xi) Operational pressure _____ CC/Rev
 - xii) Hydraulic Pump capacity _____ liters
 - xiii) Hydraulic oil reservoir capacity _____ P.S.I.
 - xiv) Hydraulic system with standing pressure _____
 - xv) Grade of steel used _____
 - xvi) Yield strength of steel used _____ P.S.I.
 - xvii) Design calculation of stability
factor provided Yes/No
 - xviii) Detailed design calculation of
Hydraulic System provided Yes/No
4. **Pedestal**
 - i) Pedestal installed on. _____
 - ii) Construction of Pedestal _____
 - iii) Material of Pedestal _____
5. **Out Riggers**
 - i) No. of out riggers _____
 - ii) Type of out riggers _____

Chief Engineer (Standards & Specifications) NTDC

[Handwritten signatures and initials]