

Training Centre
National Security Guard
PO : Manesar
Distt : Gurugram
Haryana : 122051

No P 625(2)/TC/QM/NSG/2016-17/

..13...Dec, 2016

NATIONAL SECURITY GUARD
(MINISTRY OF HOME AFFAIRS)
Government of India

Subject: **TENDER/QUOTATION FOR PROC OF '15 KVA GENERATOR SET.**

1. **Online Tender Enquiry /quotation(IN TWO BID SYSTEM)** is invited by the Inspector General, Training Centre, National Security Guard on behalf of President of India, for proc of '**15 KVA GENERATOR SET**'. Details mentioned in para 3 below :-
2. Terms and conditions :-
 - (a) Rates to be quoted F.O.R. NSG Campus, Manesar, Gurgaon (Haryana).
 - (b) The stores should be delivered within 15 days from the date of issue of supply order. If stores are not delivered within 15 days, the supply order is liable to be cancelled.
 - (c) IG, Trg Centre, will be at liberty to cancel any supply order without assigning any reason.
 - (d) The firms/dealers quoting the lowest rate for best quality of Eqpt will be given preference. **Firms will have to produce sample on the day of tender opening.**
 - (e) The rates will be valid for one year from the date of approval.
 - (f) Warranty/Guarantee in respect of item should be clearly mentioned In the tender form.
 - (g) Stores will be received in good condition and good quality only.
 - (h) Payment will be made on receipt of the complete qty of goods in good condition and quality and as per the Govt policy.
 - (i) Earnest Money of **Rs. 33,000/- (Rupees thirty three thousand) only** in the shape of Bank Draft drawn in favour of IG, Training Centre, NSG Manesar Gurgaon, Haryana payable at SBI NSG Complex, Manesar is also required and quotation without earnest Money and requisite information/paper documents will not be entertained/accepted.

3. **Details of items :-**

S/N	Name of items with specification	Unit	Rate
1.	15KVA GENERATOR SET	01 No	
<u>Specifications :-</u>			
	<ul style="list-style-type: none"> i) Fuel Type : Diesel ii) Cylinders : Minimum 2 iii) Phase : Three Phase (Minimum) iv) Power Rating Range : Minimum 15 v) Fuel Tank Capacity Range : Minimum 50 Litres vi) Weight Range : Minimum 500 Kgs vii) Speed : 1500 rpm viii) Battery Capacity : Minimum 80 Ah ix) Style : Standby Generators x) Size and Dimension : Min 1000 x 500 x 500 (L x W x H (mm)). 		
	<p><u>Salient Features :-</u></p> <ul style="list-style-type: none"> i) All parts of DG Set i.e engine, alternator and other assemblies shall be of robust construction, corrosion resistant and require low maintenance. ii) The engine shall comply all the statutory pollution regulation norms of State & Central Government including those of emissions & noise. iii) The set shall run with minimum vibration and noise. The noise level shall be 75d6A or better at 1 meter from the acoustic enclosure surface conforming to Environmental (Protection) rules issued by Central Pollution Control Board, Govt. Of India. iv) Noise from DG set should be controlled by providing an acoustic enclosure (optional as required by purchaser) by treating the room acoustically. The acoustic enclosure shall be of modular construction with the provision to assemble and dismantle easily. The enclosure should be fabricated with 2mm CRCA sheet. v) DG set shall be fit to mn continuously for at least 16 hours in every 24 hours at 80% load as per ISO : 8528. vi) The coolant used in the liquid cooled engine shall be thermostatically controlled from full load to light load controlling the coolant flow through the radiator ensuring optimum liquid cooled temperature. vii) In case of liquid cooled engines, hot air from the radiator shall be taken out into expansion chamber through a suitable tarpaulin or any other duct and thrown out thorough the acoustically treated hot air outlets. viii) The diesel engine and the alternator shall be mounted on a common base of robust construction. The diesel alternator set shall be supplied with vibration proof mountings. The other accessories shall also be supplied as required. ix) The alternator shall be driven directly by the diesel engine through direct. 		

- x) Coupling of suitable design capable of absorbing minor misalignments. The maximum permissible cyclic irregularity shall conform to IS: 1000 (PT VII).
- xi) The diesel generating set shall be supplied with all accessories, which are necessary for its proper monitoring. These shall include silencer, filters, air cleaner, fuel tank, pressure gauge for lubricating oil, Automatic Control Panel etc.
- xii) Standard commercially available components shall only be used to permit easy availability of spares for maintenance.
- xiii) Small parts such as nuts, bolts and washers shall be chrome plated galvanized for protection against corrosion.
- xiv) The semiconductor devices used in Automatic Control Panel (ACP) shall be of industrial grade with operating temperature range -25°C to + 85°C.
- xv) Hooks or other suitable arrangements shall be provided for lifting the set by pulley block during transit and installation.
- xvi) Provision shall be made for earthing of non-current carrying parts of the diesel generating set Earthing terminals of suitable size shall be provided where earth connections to the apparatus are necessary.
- xvii) In the construction of the diesel generating set, control panel and other equipment, provision of Indian Electricity Rules, 1965 with up to date amendments shall be complied with so as to make the electrical installation safe.
- xviii) The engine shall be capable of delivering an output of 10% in excess of its rated : output at its rated speed for a period of one hour in any period of 12 hours. Continuous rating without undue heating of the engine or any other mechanical trouble as per IS: 10000 (PT.IV).
- xix) The nominal output voltage of the alternator shall be 230V/240V, 50 Hz for single-phase unit.
- xx) The variation of output voltage shall be automatically regulated within + 1.5% of the nominal value from no load to full load at any power factor between 0.8 (lagging) to unity.
- xxi) Response time : Upon application of full load at 0.8PF lagging, output shall recover to 3% of the Steady state value in 1 sec. or less.
- xxii) The normal frequency of the output shall be 50Hz. The percentage variation in output frequency for load variation shall not exceed the prescribed percentage variation of the speed of the engine under such conditions (IS 10000 (PT.VIII) of this specification.
- xxiii) The output waveform should be sinusoidal. The line to line voltage harmonics distortion shall be less than 5% and comply all the provisions of IS:13364(Part 11).The en

Rating

The nominal KVA of the diesel generating set shall be as specified by the Purchaser

The recommended nominal rating 15 KVA sets and shall conform to IS: 10000 (Part IV).

Overloading

- The engine shall be capable of delivering an output of 10% in excess of its rated output at its rated speed for a period of one hour in any period of 12 hours ;continuous rating without undue heating of the engine or any other mechanical trouble as per IS: 10000 (Pt. IV).
- **Output Voltage and Frequency**
 - I. The nominal output voltage of the alternator shall be 230V/240 V, 50 Hz for single-phase unit and 415 V ,50 Hz for 3phase unit.
 - II. The variation in output voltage shall be automatically regulated within +_ 1.5% of the the nominal value from no load to full load at any power factor between 0.8 (lagging)to unity.
 - III Response time: Upon application of full load at 0.8PF lagging, output shall recover to 3% of the steady state value in 1 sec. or less.
 - IV The nominal frequency of the output shall be 50Hz. The percentage variation in output frequency for load variation shall not exceed the prescribed percentage variation of the speed of the engine under such conditions (IS 10000(Pt.VII) of this specification.
 - V. The output waveform should be sinusoidal. The line to line voltage harmonics distortion shall be less than 5% and comply all the provisions of IS:13364(Part 11).

REQUIREMENTS FOR DIESEL ENGINE(AS PER CPCB-II)

- The engine shall meet the requirements of IS: 10000 (Pt.1 to XII), IS: 10001and IS: 10002.
- The engine shall be of reciprocating compression ignition (diesel) type. It shall be 4-stroke, single/multi cylinder engine and work at 1500 RPM. The engine shall be provided with a flywheel of sufficient rims, so that the speed of rotation is uniform .The cyclic variation shall not be greater than the limits prescribed in IS: 10000 (Pt.VII).
- The rated output of the engine in KW at standard conditions prescribed under Won I of IS: 10000 (Pt.IV) shall be as given by the manufacturer. It shall be capable of driving the alternator continuously at its full rated load and speed without overheating of the engine or any mechanical trouble under the worst site conditions.
- The engine shall be supplied with a governor of cClass A 1 and shall maintain the engine speed within the limits as specified in IS: 10000 (Pt.VII).
- The engine shall be of cold starting type. The electric starting and stopping arrangement shall be capable of being operated from a nearby room other than in which DG set is installed.

- A 12V Low maintenance / Maintenance free Lead acid battery (conforming to IS: 7372/ IEC 60095-1, Class B) of adequate capacity capable of providing at least 20 starts without recharging shall be provided. The battery shall have the following characteristics:
 - a. High cranking current capability with minimum voltage droops.
 - b. Ability to crank cold engines.
 - c. Good low temperature performance.
 - d. High vibration and shock proof due to running of generator.
 - e. Suitable for dusty and humid environment.
 - f. Excellent recharge capability.
 - g. Compact and light weight
- The engine shall be required to operate on high-speed diesel oil to IS: 1460.
- A service tank for holding oil for 8 hours consumption at full load shall be supplied along with the engine. Fuel pumps shall have a suction lift of 1metre, if required by the purchaser. A fuel transfer pump to easily transfer fuel from a barrel at the ground level to the fuel tank shall be supplied.
- The silencer shall be detachable so that, if required, an extension pipe can be used for mounting the silencer outside the room in which the diesel generating set is installed. This extension pipe shall be suitably insulated to reduce heat dissipation inside the room.
- The engine shall be Air/ Liquid cooled as specified in the NIT . For air cooled engine, an automatic engine shut down arrangement shall be provided to avoid any damage to the engine in case of high cylinder head temperature. The liquid cooled engine shall have a coolant recovery system.
- The lubrication system shall be of pressure type and shall be designed to work under arduous service conditions. The manufacturer shall specify the grade/ brand of lubrication oil to be used. The lubricating oil filter shall also be provided.
- The supplier shall state the fuel consumption at 25% load, 50% load, 75% load, 100% load and 1 10% load (one hour rating). The specific fuel consumption (SFC) in gml kWh shall comply all the provisions of IS: 10001 & 10002. Certificate regarding SFC shall be submitted from reputed National & International lab.
- Depending upon site conditions, specific fuel consumption shall be calculated as per IS: 10000 (Pt .IV).
- Specific fuel consumption (SFC) of the engine after the endurance test specified in Section -I of IS: 10000 (Pt. IX) shall not increase by more than 5% of the value obtained after the initial performance test swed in Section –I of IS: 10000 (Pt VIII).
- All parts of engine, which require periodical maintenance, shall be easily accessible.
- **REQUIREMENTS FOR ALTERNATOR**
- The alternator shall be self excited and self regulated type of specified KVA rating in single %Phase at 230/415V, 50Hz and 1500 rpm and 0.8 of lagging power factor and shall conform to the requirements of IS: 13364 Pt. I upto 20KVA or IS: 13364 Pt. II above 20KVA. It shall also satisfy the performance requirements as specified in specification.

- The alternator shall be dynamically balanced and shall be capable of withstanding speeds up to 20% in excess of the rated speed.
- The alternator shall be housed in a screen protected drip proof enclosure.
- The alternator shall be capable of withstanding for not less than 15 seconds a current 50% in excess of its rated current after having attained the thermal equilibrium corresponding to the rated load. It shall also be capable of withstanding a short circuit across its output terminals for a duration of 3 seconds.
- The windings shall be vacuum impregnated. The winding insulation shall be of Class H or superior and designed & constructed to withstand tripping conditions.
- The output terminals shall be enclosed in a terminal box mounted in accessible position on the alternator frame. Cable glands shall be provided for all cables from alternator terminal box to the control panel.
- **REQUIREMENTS OF AUTOMATIC CONTROL PANEL (ACP/AMF)**
- An ACP panel of wall/ floor mounting type suitable for indoor installation shall be provided. It shall be totally enclosed type and dust proof with IP54. Level of protection.
- The ACP panel shall have:
 1. Provision for automatic start/ stop of DG set in case of AC mains failure
 2. and its restoration respectively.
 3. Provision for automatic changeover of load from mains to DG set and
 4. vice-versa.
 5. Provision for manual start/ stop of DG set.
 6. Provision for testing the DG set.
 7. Provision for fault resetting in DG set.
 8. Protective circuit with trip and warning facility.
 9. Provision to extend the alarms to remote places.
- The panel shall have clean flush appearance with all its accessories firmly fixed with all measuring instruments, pushbuttons and lamps arranged in a logical manner in the front panel.
- Lightning & Surge protection shall be provided for the electronic components used in the Control panel. The IEC standards 61312, 61024, 61643 and VDE- 0100534 pertaining to protection against lightning and surge shall apply for all electronic equipment to withstand static electricity, electric fast transient and surge voltage.
- The ACP panel shall be fabricated using 16 SWG CRCA sheet, suitable for outdoor indoor application, painted with two coats of red oxide primer and two coats of synthetic enamel paint of pebble grey RAL 7032 colour with proper painted MS Angle I Channel support cut-outs for cable entry from the top/ bottom.
- All pushbuttons, selector switches, meters, indication lamps etc. shall be identified with screen printed anodised aluminium or any other type of label with long life with black/ red blue background pasted or fixed firmly on the base of the components.
- All wiring shall be with 650V grade flameproof PVC insulated copper wires conforming to IS: 694. All wires shall be securely clamped or tied to insulated supports. Insulating grommets I bushes I covering of suitable

design shall be used to protect the wires when passing in vicinity of sharp edges in the panel and instrument casing. The wiring and other components shall be easily accessible.

- All conductors, carrying current, shall be liberally rated and shall have suitable terminations preferably of crimped type and suitable fastener nuts, bolts, and screws of adequate size to provide requisite contact pressure and prevention against loosening due to vibration.
- Power contactors of suitable rating (1.5 times of the DG set's rated current) with electrical and mechanical interlock shall be provided for mains and DG load transfer. Power contactors should have surge protection. HRC fuses IMCB IMCCB of suitable rating shall be provided for mains incoming, DG incoming and common outgoing.
- In-built SMPS based battery charging unit with trickle & boost mode automatically selectable with overcharging, short circuit & reverse polarity protection shall be provided. Provision shall be made for charging- the DG battery under all conditions.
- Ventilation louvers of suitable size with wire-mesh should be provided wherever required.
- Operating modes of ACP:
- The ACP shall be able to operate in the following modes. Selected by means of selector switch-
- Auto mode:
 - In this mode, the DG set should start automatically in case of
 - I. Mains failure
 - II. Low & high mains voltage beyond 150-275V for single phase DG set and 360-... 460V for 3-phase DG set.
 - III. Single phasing or phase reversal of main supply.
 - The above shall be effected through Line Voltage Monitor (LVM) with manual adjustment for over and under voltage.
 - When the engine starts, and alternator reaches the preset voltage level of 170V,
 - the DG Contactor should close automatically restoring the supply to load.
 - The Auto start system shall make three attempts. In case it fails to start the DG set, the starting system shall be automatically disconnected and locked out.
 - After restoration of healthy mains voltage, the DG Contactor shall open and mains supply shall be extended to load. However, DG set shall continue to run for 3 minutes and shutdown after that if mains supply remains stable.
 - During the above mentioned 3 minutes, if the mains fail again. the DG shutdown sequence should be abandoned and the DG contactor should close again restoring the DG supply to load.

Manual mode:

Operating modes of ACP:

The ACP shall be able to operate in the following modes. Selected by means of selector switch-

- **Auto mode:**
 - In this **mode**, the DG set should start automatically in case of
 - I. Mains failure

	<p>II. Low I high mains voltage beyond 150-275V for single phase DG set and 360-... 460V for 3-phase DG set.</p> <p>III. Single phasing or phase reversal of main supply.</p> <ul style="list-style-type: none"> ➤ The above shall be effected through Line Voltage Monitor (LVM) with manual adjustment for over and under voltage. ➤ When the engine starts, and alternator reaches the preset voltage level of 170V, the DG Contactor should close automatically restoring the supply to load. ➤ The Auto start system shall make three attempts. In case it fails to start the DG set, the starting system shall be automatically disconnected and locked out. ➤ After restoration of healthy mains voltage, the DG Contactor shall open and mains supply shall be extended to load. However, DG set shall continue to run for 3 minutes and shutdown after that if mains supply remains stable. ➤ During the above mentioned 3 minutes, if the mains fail again. the DG shutdown sequence should be abandoned and the DG contactor should dose again restoring the DG supply to load. <ul style="list-style-type: none"> ● Manual mode: <ol style="list-style-type: none"> I. Engine shall be started / stopped manually from ACP control panel by means of individual pushbuttons. II. The DG contactor shall be closed I opened manually by means of individual Push buttons. The control circuit shall permit the contactor to close only if alternator voltage is within specified limits. III. Mains supply contactor shall be closed I opened manually by means of Individual pushbuttons, Line Voltage Monitor (LVM) protection shall be extended to this mode also. <ul style="list-style-type: none"> ● Test Mode: The test mode shall function like manual mode for DG set. but supply shall not be Transferred to load <ul style="list-style-type: none"> ● The following accessories shall be mounted on the ACP controlled panel: <ul style="list-style-type: none"> ○ AC voltmeter of scale length not less than 84mm and scale range of 0300V for single phase and 0-600V with selector switch for 3 phase DG set. ○ AC ammeter of scale length not less than 64mm and appropriate scale range depending upon KVA rating for each phase of output shall be provided. ○ Hour meter to record time for which DG set has run. ○ One ON/OFF switch/MCCB of robust construction for alternator output. ○ Push buttons for starting and stopping the engine. ○ HRC fuses of suitable rating.
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- Terminals for earthing.
- Electronic kilowatt-hour meter with counter display and class 1.0 accuracy
- DC voltmeter 0-50V, of scale length not less than 84mm square type.
- DC Ammeter 0-30A, of scale length not less than 84mm square type.
- Analog frequency nieter with pointer and dial, 45-55Hz range, of scale length not less than 84mm sq type.
- One pilot lamp for each phase to indicate that altemator is providing output in each phase.
- Control fuses I MCB.
- Emergency stop pushbutton to stop the DG in case of emergency in all modes.
- Screen-printed wiring diagram of control panel.

Note: Voltmeter and ammeter shall be of Class 1.0 accuracv as per IS: 1248.

- Alarm & Indication lamps
 - The alarm shall be DC hooter fixed on the ACP panel with audible level control.
 - Accept and Reset pushbuttons shall be provided to accept me alarm and to reset the system alter fault has been cleared.
 - All indication lamps shall be LED type of sufficient size to provide clear indication during day time.
 - Lamp test pushbutton to test all lamps.
 - Status indication
 - I. Mains healthy
 - II. Load on mains
 - III. Load on DG
 - **Alarms with warning indications**
 - Low Fuel Level
 - Low lubricating oil pressure
 - High water temperature (in case of liquid cooled)
 - High cylinder head temperature (in case of air cooled)
 - Overload
 - Fail to start
 - Engine over speed
 - Low battery voltage
 - Battery charger failure
 - Suitable protection arrangement shall be provided to protect the **DG** set in case of :-
 - Low lubricating oil pressure
 - Overloading
 - High water temperature (in case of liquid cooled)
 - High cylinder head temperature (in case of air cooled)
 - Start failure after three consecutive attempts.
 - Engine over speed
- All **the** alarm **protections** and status indications shall function in

Auto. Manual & Test **mode**

- **Potential free contact for Remote Monitoring:**

Potential free relay *contacts shall be made* available for remote monitoring on the following:

- Low lubricating oil pressure
- Overloading
- High water temperature (in case of liquid cooled)
- High cylinder head temperature (in case of air cooled)
- Start failure after three consecutive attempts.
- Low fuel level
- Load on mains
- Load on DG

- **Earthing**

The DG set shall have a earth terminal and shall be properly earthed.

MAINTENANCE TOOLS AND SPARES

- A set of tools considered necessary for proper maintenance of **the** diesel generating set shall be supplied with the set. The details of the tools shall be listed in **the** instruction manual. The supplier shall also give **the** list of tools proposed to be supplied while offering tender against this specification.
- A list of recommended spares required for **two**, years normal maintenance shall be furnished along with the set. This should cover all requirements mentioned in instruction manual.

DOCUMENTATION

- Instruction & Maintenance manual in duplicate shall be supplied along with every DG set. The manual shall include drawings of the diesel generating set together with details showing the component parts, their catalogue code numbers, assembly, drawings, installation drawings and recommended installation methods ,dimensional layout drawings. Details on testing and adjustment procedures, initial checks **on** receipt at site, detailed installation and commissioning procedures, maintenance procedures, proposed routine maintenance test actual test results obtained for **the** particular unit at **the** factory and detailed trouble shooting chart shall be outlined in **the** manual.

- **Alarm & Indication lamps**

- The alarm shall be **DC** hooter **fixed** on **the** ACP panel with audible level *control*.
- **Accept and reset** push buttons shall be provided to accept alarm and to reset **the** system after fault has been cleared.
- All indication lamps shall be LED type of sufficient size to provide clear indication during day time.
- Lamp test pushbutton to test all lamps.

- **Status indication**
 - I. Mains healthy
 - II. Load on mains
 - III. Load on DG
- **Alarms with warning indications**
 - LOW **Fuel Level**
 - Low lubricating oil pressure
 - High water temperature (in case of liquid cooled)
 - High cylinder head temperature (in case of air cooled)
 - overload
 - Fail to start
 - Engine Overspeed
 - Low battery voltage
 - Battery charger failure
- Suitable protection arrangement shall be provided to protect **the DG** set in the case of :
 - Low Lubricating Oil pressure
 - Overloading
 - High water temperature (in *case* of liquid cooled)
 - High cylinder head temperature (in case of air cooled)
 - Start failure after three consecutive attempts.
 - Engine over speed

All the alarms, protections and status indications shall function in Auto. Manual & Test mode.

- **Acceptance Test**

The following shall constitute acceptance tests for **the** diesel generating sets. The testing shall be carried out either at firms premises or at the premises of their authorised representatives by inspecting authority with the help of firm's representative. The inspecting authority can conduct any other test considered necessary for satisfying himself.

- Visual Examination
- Rating test (for diesel engine only)
- Load test
- Temperature rise test
- Overload test
- High voltage test
- insulation resistance test
- Regulation test
- Insulation resistance of wiring
- Verification of protections
- Control panel functions & indications
- Visual examination: Diesel generating set including the control ACP panel and the associated equipment shall be visually examined and checked to ensure compliance of the specification.
- Rating Test (for Diesel engine only): this test shall be conducted as specified in IS: 10000 (Pt.VIII).

- Load test: The diesel generating set shall be given a test run for a period of eleven hours (continuous) with the alternator on full rated load **at** 0.8 power factor, followed immediately by a 10% overload run for one hour. The performance of the diesel generating set shall be satisfactory at the end of this load test.
- Temperature Test : At the end of full load run and at the end of overload run temperature rise test as specified in Cl. 13 of IS: 4722:2001 shall be conducted. The temperature rise shall satisfy the limits mentioned in Cl. 13.2 of IS: 4722:2001. For air cooled engine, the temperature rise of the armature and field windings shall be as specified in IS: 4722:2001 for the class of insulation used in the alternator. Unless otherwise specified by the purchaser, the cooling air temperature shall be taken as 50°C

Note: In case maximum cooling air temperature is higher than 50 deg.C, the same should be specified by the purchaser.

- Overload test: An alternator rated in accordance with this standard shall be capable of withstanding for not less than 15 seconds a current 50% in excess of its rated **current** after having attained thermal equilibrium corresponding to the rated load, the voltage being maintained as near the rated value as possible consistent with the maximum capacity of the prime mover.
- High Voltage (Dielectric) **test**: This test shall be carried out **at** the premises of manufacturer at the conclusion of temperature rise test of the machine. The high voltage test shall be carried out as per Cl. 30 of IS: 4722.
- Insulation resistance test: at **the** end full load run and **the** end of overload run. the insulation resistance test shall be conducted as specified in IS: 4722.
- Regulation test: This test shall be carried out to satisfy the requirement of said specifications
- Fuel consumption test: The test shall be **carried** out as specified in IS:10000(pt.VIII)
- Governing Test : The governing test shall be **carried** out as per IS: 10000 Pt.VII.
- Insulation resistance of the wiring: On completion of engine **test**, the insulation of **each** unit of the local wiring in the control panel and other components of the diesel generating set shall be tested with a 500V insulation tester. The insulation resistance so measured shall not be less than one mega Ohm between each conductor of the cable and other cable conductors in accordance and shorted together with the sheath / armring / control frame / body of the machines. Verification of Protection: The working of the protection arrangements shall be verified by actually running the diesel generating set to the conditions under the protection arrangements.
- Endurance **test** - The endurance tests shall be **carried** out as **mentioned** below(CPCB2):

	<p>Endurance tests shall be performed after the initial performance tests specified in IS: 10000 (Pt.VI11)1980 "Methods of tests for internal combustion engine; Pt. VIII Performance tests. after completion of the initial performance tests, the engine shall be run for 32 cycles (each of 16 hours continuous running) at rated speed.</p> <ul style="list-style-type: none"> • The engine shall be provided with a rating plate marked with the following. <ul style="list-style-type: none"> ○ Name of manufacturer and code num, ○ Manufacturer's number and frame reference. ○ Reference to this standard. ○ BHP rating. ○ Rated output In KW. ○ <i>speed</i> in rpm. ○ Type of engine. ○ Model and number of cylinders. ○ Type of duty. ○ Type of coding. ○ Governor type. ○ Fuel oil tank capacity. ○ Lubricating oil consumption ○ Direction of rotation. ○ Date of manufacture. ○ Type approval certificate number and validity. ○ Statement that "this engine conforms to the Environment (protection) Rules 1 986" in 10mm letter size. • The rating plate shall be affixed on a part necessary for normal operation of the engine or the product and not normally requiring replacement during the life of engine or product. • The direction of rotation shall also be marked by an arrow near the shaft at the cranking end.
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4. Tender Form :-

(a) Cost of tender form (non refundable) will be **Rs 500/-** (Rupees Five hundred only), which will be paid by either DD/cash in favour of IG, Training Centre, NSG Manesar Gurgaon, Haryana payable at SBI NSG Complex, Manesar at the time of collection of tender form or in case downloaded from the website, amount be submitted alongwith tender form.

(b) Tenderers should submit the tenders in **TWO BID SYSTEM (Technical bid and price bid)** through online only. **Offline bid will not be entertained.**

(c) Bid can only be submitted online after uploading the scanned copy of registered firm and Latest VAT/Sales Tax return in the PDF format.

(d) The successful bidder should submit the performance security @ 10% Cost of the Generator Set through Bank Draft drawn in favour of IG, Training Centre, NSG Manesar Gurgaon, Haryana payable at SBI NSG Complex, Manesar. Earnest money will be refunded to successful bidder on receipt of performance security.

5. Additional Documentation :-

Self attested copies of registered firm and latest VAT/ Sales tax return alongwith original Demand Draft for EMD and cost of tender shall be deposited in the office of the Inspector General, Training Centre NSG, Manesar, Gurgaon, Haryana on or before the closing date i.e. **03 Jan 2017 at 1000 hrs.** The technical bid will be opened on the same day i.e **03 Jan 2017 at 1130 hrs.** IG, Training Centre, NSG, Manesar shall reserve the right not to accept any of quotations merely on the ground of rates being lowest. The payment will only be released to the firm after verification of quality of stores with the sample.

-Sd/-13/12/2016
Group Commander (Lgs)
Training Centre, NSG