



Annex A: Terms of Reference
Maintenance of Caterpillar DE110-GC diesel generators

The United Nations High Commissioner for Refugees in Ukraine invites qualified generator maintenance service providers to submit their proposals for establishment of a Framework Agreement for the maintenance of Caterpillar DE110-GC diesel generators in Kyiv, Vinnytsia and Dnipro.

Placement of diesel generators Caterpillar DE110-GC (50-Hz)			
No	Model	Location	Quantity
1	Caterpillar DE110-GC	26, Malinovskogo street, Vinnytsia	2
2	Caterpillar DE110-GC	17, Lamana street, Dnipro	1
3	Caterpillar DE110-GC	75, Zhylianska street, Kyiv	1

List of works for annual maintenance of diesel generators	
1	Maintenance period: 1 time per year (*up to reaching regulatory works for 200 run hours)
2	Response time to an emergency call: 2 working days (48 hours) (in case of force majeure, the call time may be increased)
* Regulatory works upon reaching 200 working hours are carried out according to separate provisions and service specifications	
General overview	
1	Visual inspection of the engine, generator, switch and control panel
2	Checking connections for oil, water and fuel leaks. If necessary, eliminate malfunctions
3	Control of the level of coolant, oil and fuel
4	Checking the degree of battery charge. Cleaning the battery
5	Checking the operation of the coolant heater Checking the separator for separating water from fuel
6	Checking the separator for separating water from fuel
Fuel system	
7	Checking the fuel level in the main tank
8	Checking the serviceability of the fuel transfer pump
9	Inspection of fuel pipelines and connections
Cooling system	
10	Checking the air cleaner element for sufficient air supply to the engine. If necessary, its cleaning
11	Inspection of the radiator from the outside, if necessary, cleaning
12	Checking the level of coolant (antifreeze)
13	Inspection of connection nozzles
14	Checking the belts of the battery charger generator
Lubrication system	
15	Replacement of motor oil
16	Replacement of oil filter
Exhaust system	
17	Inspection of the tightness of the connections of the exhaust system
Dynamo	
18	Output voltage and frequency control
19	Checking the insulation for the absence of a short circuit in the windings of the generator
20	Checking the power circuits of the generator
21	Checking the control and control chains of the generator
22	Checking the operation of the "emergency stop" system to block the start

Automatic panel	
23	Checking the control and operational chains of the panel
24	Verification of alert systems
25	Checking the control buttons
26	Inspection of automatic switchers and fuse holders
Switching equipment for automatic switching of AVR	
27	Checking the control and operational chains of AVR
28	Checking the AVR power chains
29	Checking the actuation of power contactors
30	Checking the installed programming registers
Additional services	
31	Emergency call for possible restart of the generator
32	Generator repair after detected miss functions

Regulatory work upon reaching 200 running hours	
General overview	
1	Visual inspection of the engine, generator, switch and control panel
2	Checking connections for oil, water and fuel leaks. If necessary, eliminate malfunctions
3	Control of the level of coolant, oil and fuel
4	Checking the degree of battery charge. Cleaning the battery
5	Checking the operation of the coolant heater
6	Checking the separator for separating water from fuel
Fuel system	
7	Checking the fuel level in the main tank
8	Checking the serviceability of the fuel transfer pump
9	Inspection of fuel pipelines and connections
10	Replacement of fuel filter
Cooling system	
11	Checking the air cleaner element for sufficient air supply to the engine. If necessary, its cleaning
12	Inspection of the radiator from the outside, if necessary, cleaning
13	Checking the level of coolant (antifreeze)
14	Inspection of connection nozzles
15	Checking the belts of the battery charger generator
16	Coolant replacement
Lubrication system	
17	Replacement of motor oil
18	Replacement of oil filter
Exhaust system	
19	Inspection of the tightness of the connections of the exhaust system
Dynamo	
20	Output voltage and frequency control
21	Checking the insulation for the absence of a short circuit in the windings of the generator
22	Checking the power circuits of the generator

23	Checking the control and control chains of the generator
24	Checking the operation of the "emergency stop" system to block the start
Automatic panel	
25	Checking the control and operational chains of the panel
26	Verification of alert systems
27	Checking the control buttons
28	Inspection of automatic switchers and fuse holders
Switching equipment for automatic switching of AVR	
29	Checking the control and operational chains of AVR
30	Checking the AVR power chains
31	Checking the actuation of power contactors
32	Checking the installed programming registers

Specification of services and consumables for the maintenance of 1 Caterpillar DE110-GC diesel generators			
№	Costs for services and transport costs	Unit	Quantity
1	Transportation and depreciation costs	km	Supplier's information
2	Travel expenses for specialists	hour	Supplier's information
3	Maintenance by specialists	hour	Supplier's information
№	Costs for consumables	Unit	Quantity
1	Oil filter	pcs	1
2	Motor oil for diesel engines, according to API classification: CI-4, CH-4, CG-4, CF-4/CF, 10w-40 (10w-30, 15w-40)	liters	10
3	Fuel filter	pcs	1
4	Air filter	pcs	1
5	Coolant (antifreeze) G11 20 kg	pcs	1
6	Low-value consumable materials	kit	1