From: Smith, Melanie A. (DNREC)
To: DAQ.DNRECtory
Subject: FW: Middletown Materials APC-2002/0738-OPERATION (SM)(Amendment 13)
Date: Wednesday, August 5, 2026 10:38:41 AM
Attachments: DNREC_Source__Response.docx
4CPXL27.0HRP_BDT03437.pdf
CC_MFPXL03.4FSD_015 CJ702289.pdf
DCPXL12.5HPB-004_EPA KWJ04135.pdf
eIRL97-68EA005305 BDL00773.pdf
Cert_RCPXL09.3NTF-00_1NGH07749.pdf
XCPXL27.0HRP 4CR01170.pdf
image001.png
image002.png
image003.png
image004.png
image005.png

Please file for additional information request. I will put in DEN that application is complete. Thank you.

Melanie Smith, P.E.
Engineer
Phone: 302-739-9436
Email: melanie.smith@delaware.gov
100 W. Water Street, Suite 6A, Dover, DE 19904
dnrec.delaware.gov

From: [redacted]
Sent: Wednesday, August 5, 2026 8:10 AM
To: Smith, Melanie A. (DNREC) <Melanie.Smith@delaware.gov>
Subject: Fwd: Air Permit Follow-up

Hi Melanie,

I hope you are doing well.

Below please find responses to your comments. Please let me know if you need any additional information.

1. Comment: To finish the memo, I need AERSCREEN input for the mechanical pieces of equipment. The crushers and screeners: long side and short side of the inlet plane and the height of the plane above ground. For the transfer points to a stockpile, these are

volume sources. I'll need the square root of the total footprint area of the volume source at the ground and the height from the ground to the conveyor discharge. I don't believe there's any way to model conveyor to conveyor. For a conveyor to a screener, it would be the square root of the screener floor area and the height from the screener floor to the discharge point of the conveyor.

Response: See attached document. Please review and let me know of any comments.

2. Comments: Any proof of the Tier designations for the engines.

Amber: Available certificates attached.

3. Comment: Will (or are) Middletown Materials be using GCS-04, 15, 21, or 16 from Permit: APC-2002/0738-OPERATION (SM)(Amendment 12) before you get Amendment 13? It's fine if they are but I will have to separate the permits.

Response: yes.

4. Melanie's Comments: 7 **DE Admin. Code** 1125, Section 4.3, *Minor New Source Review, Requirements for Preconstruction Review*, is applicable. The new sources were constructed after August 11, 2005, the sources require a permit under 7 **DE Admin. Code** 1102, Section 2.1.3, and the sources are not covered by the Emission Offset Provisions (EOP) or Prevention of Significant Deterioration of Air Quality (PSD). Provide construction dates for the following units.

Amber's Response:
GCS32: Equipment manufactured 2025
GCS29: Equipment manufactured in 2012.
GCS24: Equipment manufactured in 2010.
GCS11: Equipment manufactured in 1999:
GCS18: Equipment manufactured in 2011
GCS28: Equipment manufactured in 2017

5. Comment: You need to further reduce NOx emission to below 25 tpy.

Resp0nse: The site is willing to restrict hours of operation to 1300 per year operation for the equipment?

6. Comment: You need to identify a community contact for each County.

Response: I believe a contact was provided in the application for New Castle County.

Sussex County: [redacted]

Organization Represented by Community Leader: President Blue Heron Estates HOA President

Local Community Leader E-Mail Address: [redacted]

Local Community Leader Telephone number: [redacted]

Kent County: [redacted] Treasurer, [redacted] ([redacted])

[redacted]
Program Manager
RainWise Environmental Solutions, LLC.
302.423.8137
www.rainwiseenviro.com.
[redacted]

DNREC Requested Source Data

Manufacturer specifications were used where available to establish inlet dimensions, screen dimensions, stockpile capacities, and conveyor discharge heights. Parameters not available in manufacturer literature, including equipment elevations above grade and actual stockpile footprints, will be field verified with the equipment in its normal operating configuration prior to completion of any required dispersion modeling.

Due to the portable nature of the crushing and screening equipment and the fact that operating configurations vary by project and material stream, certain release elevations and stockpile dimensions are not fixed design parameters and therefore require representative engineering assumptions for preliminary modeling purposes.

Where manufacturer specifications did not provide a required dimension, representative engineering assumptions were developed based on the equipment type and anticipated operating configuration. Portable crusher inlet planes were assumed at 10 feet above grade for preliminary modeling purposes, screen and trommel planes were assumed at 8 feet above grade, and conveyor discharges to receiving equipment were assumed to occur approximately 3 feet above the receiving plane. Typical product stockpiles were assumed to have a 30-foot by 30-foot footprint, while smaller side-conveyor stockpiles were assumed to have a 25-foot by 25-foot footprint. These values are preliminary modeling assumptions subject to field verification or manufacturer confirmation at DNREC's request.

Consistent with discussions regarding modeling methodology for portable aggregate operations, conveyor-to-conveyor transfers are not proposed as separate modeled sources. Emissions associated with these transfers are represented by the final downstream crusher inlet, screen inlet, or stockpile discharge point.

Equipment ID	Equipment Description	Source Type	Length (ft)	Width (ft)	√Area (ft)	Release Height (ft)	Basis
GCS-32	McCloskey I44R Impact Crusher	Crusher Inlet Plane	3.80	2.67	N/A	10	Manufacturer dimensions; preliminary inlet elevation assumption
GCS-32	I44R Integrated Pre-Screen	Screen Plane	6.93	3.49	4.92	8	Manufacturer dimensions; preliminary elevation assumption
GCS-32	Main Product Conveyor to Stockpile	Volume Source	30	30	30	11.57	Preliminary stockpile footprint assumption; manufacturer discharge height
GCS-32	Side/Fines Conveyor to Stockpile	Volume Source	25	25	25	8.17	Preliminary stockpile footprint assumption; manufacturer discharge height

Equipment ID	Equipment Description	Source Type	Length (ft)	Width (ft)	√Area (ft)	Release Height (ft)	Basis
GCS-33	EDGE TS100 Stacker	Volume Source	N/A	N/A	64.8	43.33	Calculated from manufacturer stockpile capacity and discharge height
GCS-29	McCloskey R230 Screen	Screen Plane	20	6	10.95	8	Manufacturer dimensions; preliminary elevation assumption
GCS-25	Ezystak BF7042 Hopper	Hopper Inlet Plane	TBD	TBD	N/A	8	Field verification pending; preliminary elevation assumption
GCS-24	McCloskey 621RE Trommel	Equivalent Inlet Dimension	6 equivalent	6 diameter	6.0	8	Representative trommel assumption
GCS-11	MCB616REG Trommel	Equivalent Inlet Dimension	6 equivalent	6 diameter	6.0	8	Representative trommel assumption

Equipment ID	Equipment Description	Source Type	Length (ft)	Width (ft)	√Area (ft)	Release Height (ft)	Basis
GCS-18	Terex Warrior 1800 Screen	Screen Plane	16	5	8.94	8	Manufacturer dimensions; preliminary elevation assumption
GCS-28	McCloskey J45 Jaw Crusher	Crusher Inlet Plane	3.75	2.25	N/A	10	Manufacturer dimensions; preliminary elevation assumption
GCS-26	Nordberg NW1213CC Crusher	Crusher Inlet Plane	4.33	2.92	N/A	10	Manufacturer dimensions; preliminary elevation assumption
GCS-26	Integrated Screen	Equivalent Modeling Dimension	TBD	TBD	10	8	Equivalent modeling parameter

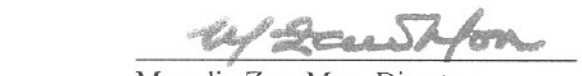
Note: The TS100 equivalent source dimension of 64.8 feet was calculated from the manufacturer's maximum stockpile volume of 1,925 cubic yards and maximum stockpile height of 37.2 feet assuming conical stockpile geometry.

Parameter	Standard Assumption
Portable crusher inlet elevation	10 ft above grade
Portable screen/trommel elevation	8 ft above grade
Conveyor discharge to crusher	3 ft above receiving plane
Conveyor discharge to screen	3 ft above receiving plane
Main stockpile footprint	30 ft x 30 ft
Side/fines stockpile footprint	25 ft x 25 ft

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

2004 Model Year Certificate of Conformity

Manufacturer:	**CATERPILLAR INC.**
Certificate Number:	**CPX-NR9-04-04**
Effective Date:	**12/12/03**
Date Issued:	**12/12/03**



Merrylin Zaw-Mon, Director
Certification and Compliance Division
Office of Transportation and Air Quality

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR 89, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 89 and produced in the stated model year.

Nonroad Diesel Engine Family: **4CPXL27.0HRP**

This certificate of conformity covers only those new nonroad compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 89 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 89. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking and trading provisions of 40 CFR Part 89, Subpart C. Failure to comply with these provisions may render this certificate void ab initio.

Family PM emission limit: .29 g/kW-hr

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 89.129-96 and 89.506-96 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 89. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 89.

This certificate does not cover nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2021 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **FPT Industrial S.p.A.**
(U.S. Manufacturer or Importer)

Certificate Number: MFPXL03.4FSD-015

Effective Date: 08/13/2020

Expiration Date: 12/31/2021

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 08/13/2020

Revision Date: N/A

Model Year: 2021
Manufacturer Type: Original Engine Manufacturer
Engine Family: MFPXL03.4FSD

Mobile/Stationary Indicator: Both
Emissions Power Category: 75<=kW<130
Fuel Type: Diesel
After Treatment Devices: Diesel Oxidation Catalyst, Ammonia Slip Catalyst, Selective Catalytic Reduction
Non-after Treatment Devices: Electronic/Electric EGR - Cooled

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Parts 60 and 1039, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Parts 60 and 1039 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Parts 60 and 1039 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Parts 60 and 1039.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Parts 60 and 1039. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Parts 60 and 1039.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

The actual engine power may lie outside the limits of the Emissions Power Category shown above. See the certificate application for details.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2013 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT OF 1990

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: DCPXL12.5HPB-004

Effective Date: 06/11/2012

Expiration Date: 12/31/2013

Byron J. Bunker, Acting Division Director
Compliance Division

Issue Date: 06/11/2012

Revision Date: N/A

Model Year: 2013
Manufacturer Type: Original Engine Manufacturer
Engine Family: DCPXL12.5HPB

Mobile/Stationary Indicator: Both
Emissions Power Category: 130<kW<=560
Fuel Type: Diesel
After Treatment Devices: Diesel Oxidation Catalyst, PTOX-DPF-Active
Non-after Treatment Devices: Engine Design Modification, Electronic/Electric EGR - Cooled, Electronic Control
FELs: NOx 1.8 g/kW-hr, PM 0.01 g/kW-hr

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Parts 60 and 1039, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Parts 60 and 1039 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Parts 60 and 1039 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Parts 60 and 1039.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Parts 60 and 1039. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Parts 60 and 1039.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking and trading provisions of 40 CFR Part 1039, Subpart H. Failure to comply with these provisions may render this certificate void *ab initio*.

NATIONAL STANDARDS AUTHORITY
of Ireland

TYPE-APPROVAL CERTIFICATE

Communication concerning the extension of type-approval of an engine type or family of engine types with regard to the emission of pollutants pursuant to Directive 97/68/EC, as last amended by Directive ../../EC.

Type Approval No: ***eIRL*97/68EA*0053*05*** Extension No: ***05***

Reason for Extension (where appropriate): ***-Addition of four new engine ratings.***
-Deletion of twenty three engine ratings.
-Editorial and factual changes to the information document. (changes / additions to fuel rate, turbocharger, electronic software, fuel injection pumps and injectors of various engine family members and of the parent engine).

SECTION I

0.	General	
0.1	Make (name of undertaking):	***Caterpillar Inc.***
0.2	Manufacturer's designation of the parent/and (if applicable) of the family engine(s) type(s):	***3196/C-12.***
	Engine family:	***?CPXL12.0ESK.*** ***? is used for the engine year code. (See manufacturer's documentation for year code).***
0.3	Manufacturer's type coding as marked on the engine(s):	***3196/C-12.***
	Location:	***Engine block and label on engine valve cover.***
	Method of affixing:	***Adhesive label.***
0.4	Specification of machinery to be propelled by the engine:	***A.***
0.5	Name and address of manufacturer:	***Caterpillar Inc., 100 NE Adams Street, Peoria, Illinois 61629, USA.***
0.6	Location, coding and method of affixing of the engine identification number:	***Engine block and label on engine valve cover.***
0.7	Location and method of affixing of the EC approval mark:	***Engine valve cover, adhesive label.***

Type Approval No: *eIRL*97/68EA*0053*05* Extension No: *05.*

0.8 Address(es) of assembly plant(s): ***Caterpillar Inc., Mossville, Illinois, USA.***

SECTION II

1. Restriction of use (if any): ***N/A.***

1.1. Particular conditions to be respected in the installation of the engine(s) on the machinery

1.1.1. Maximum allowable intake depression: ***3.7 kPa.***

1.1.2. Maximum allowable back pressure: ***6.7 kPa.***

2. Technical service responsible for carrying out the tests: ***TÜV Automotive GmbH Unternehmensgruppe TÜV Süddeutschland, Daimlerstraße 11, D-85748 Garching.***

3. Date of test report: ***As before and 27.05.2002.***

4. Number of test report: ***351-0692-00-FBTP up to Ext. 05.***

5. The undersigned hereby certifies the accuracy of the manufacturer's description in the attached information document of the engine(s) described above and that the attached test results are applicable to the type.

Type-approval is: ***Granted.***

Place: ***Dublin.***

Date: ***12th June, 2002.***

Signature:



6. Documentation: ***12 sheets.***

Attachments: Information package.
Test results (see appendix 1).
Correlation study relevant to sampling systems used which are different from the reference systems (if applicable).

NSAI
Glasnevin
Dublin 9.
Telephone: 01-807 3800
[International (+353+1) 807 3800]
Facsimile: 01-807 3838

NSAI
The Granary, Michael Street,
Limerick.
Telephone: 061-411872
[International (+353+61) 411872]
Facsimile: 061-411874

APPENDIX 1

TEST RESULTS

1. Information concerning the conduct of the tests(s).

1.1. *Reference fuel used for the test*

1.1.1. Cetane number: ***45.1.***

1.1.2. Sulphur content: ***0.106%.***

1.1.3. Density: ***843.8 Kg/m³.***

1.2. *Lubricant*

1.2.1. Make(s): ***Caterpillar.***

1.2.2. Type(s): ***CT 5229.***

1.3. *Engine driven equipment (if applicable)*

1.3.1. Enumeration and identifying details: ***N/A.***

1.3.2. Power absorbed at indicated engine speeds (as specified by the manufacturer): ***N/A.***

1.4. *Engine performance*

1.4.1. Engine speeds:

Idle: ***700 r.p.m.***

Intermediate: ***1400 r.p.m.***

Rated: ***2100 r.p.m.***

1.4.2. Engine power:

	Power setting (kW) at various engine speeds		
Condition	*Intermediate*	*Rated*	
Maximum power measured on test (PM) (kW).	*325*	*382*	*A*
Total power absorbed by engine as per section 1.3.2 of this Appendix, or section 2.8 of Annex III (PAE) (kW).	*-0-*	*-0-*	*B*
Net engine power as specified in section 2.4 of Annex I (kW).	*325*	*382*	*C* *C = A+B*

1.5. *Emission levels*

1.5.1. Dynamometer setting (kW):

	Dynamometer setting (kW) at various engine speeds	
Percent Load	*Intermediate*	*Rated*
10	*0*	*38*
50	*163*	*191*
75	*244*	*287*
100	*325*	*382*

1.5.2. 8 mode emission test results:

CO: ***1.530 g/kWh.***

HC: ***0.145 g/kWh.***

NO_x: ***4.650 g/kWh.***

Particulates: ***0.1742 g/kWh.***

1.5.3. Sampling system used for the test:

1.5.3.1. Gaseous emissions: ***In accordance with Figure 2 of Annex V.***

1.5.3.2. Particulates: ***In accordance with Figure 11 of Annex V.***

1.5.3.2.1. Method: ***Multiple filters.***

TÜV AUTOMOTIVE GMBH
Unternehmensgruppe
TÜV Süddeutschland

Daimlerstraße 11
D-85748 Garching

Telefon 0 89 / 329 50 - 653
Telefax 0 89 / 329 50 - 650

TÜV
AUTOMOTIVE
TA-CP/GAR
97/68/EC

Extension 05 to
Technical report No.: 351-0692-00-FBTP
Manufacturer: Caterpillar
Type of engine: 3196/C-12
Engine family: ?CPXL12.0ESK

Extension 05 to

TECHNICAL REPORT

No.: 351-0692-00-FBTP

Approval No. eIRL*97/68EA*0053*

Test procedure according 97/68/EC

with date of 16.12.1997

relating to

measures against the emission of gaseous and particulate pollutants from internal combustion engines to be installed in non road mobile machinery.

Reason for extension:

- Addition of four engine ratings
- Deletion of twenty three engine ratings
- Editorial and factual changes to the information document (changes / additions to fuel rate, turbo charger, electronic software, fuel injection pump and injectors of various engine family members and of the parent engine rating)

Akkreditiert unter DAR-Registriernummer KBA-P-00001-95
von der Akkreditierungsstelle des Kraftfahrt-Bundesamtes, Bundesrepublik Deutschland

TÜV AUTOMOTIVE GMBH
Unternehmensgruppe
TÜV Süddeutschland

Daimlerstraße 11
D-85748 Garching

Telefon 0 89 / 329 50 - 653
Telefax 0 89 / 329 50 - 650

I. General data

0.1	Make of vehicle:	N/A
0.2	Type of vehicle:	Non road mobile machinery
0.3	Sort of vehicle:	According EC directive No. 97/68/EC
0.4	Test cycle:	8 mode test according to 3.6.1.of annex III of the regulation
0.5	Name and address of the manufacturer:	--

II. Test report

1. Technical data of test-object

1.1	Sort of vehicle (code):	--
1.2	Engine data	
	- Make of engine:	Caterpillar
	- Engine type:	3196/C-12
	- Engine family:	?CPXL12.0ESK ? is used for the engine year code (see manufacturer´ s documentation)
	- Number:	C-12
	- Name and address of the manufacturer:	Caterpillar Inc. 100 NE Adams, Peoria Illinois USA 61629

*eIRL*97/68EA*0053*05*

TÜV AUTOMOTIVE GMBH
Unternehmensgruppe
TÜV Süddeutschland

Daimlerstraße 11
D-85748 Garching

Telefon 0 89 / 329 50 - 653
Telefax 0 89 / 329 50 - 650

TÜV AUTOMOTIVE

2. Test conditions / test results

No new witness tests are required because the additions, changes and deletions of various engine family members and of the parent engine rating have no negative influence to the results.

The previous stated test results remain valid.

3. Date of check: 27.05.2002

III. Enclosures

1. Additional enclosures

Test results (1 sheet)

Specifications of engines within this family, attachments (8 sheets)

IV. Final confirmation

The inspections and measurements carried out have shown the compliance of the engine type described in this report and the attached Annex with the requirements of the present report.

With regard to the emission of gaseous and particulate pollutants from internal combustion engines of agricultural and forestry tractors the described motor type corresponds, concerning the limits, to 97/68/EC dated from 16. December 1997.

The addition of a family member and the modification of family members complies with the requirements identifying family members per 97/68/EC Annex I item 6.

The addition of a family member and the modification of family members complies with the requirements of emissions of pollutants per 97/68/EC Annex I item 4.

This test report consists of sheet 1 to 3.

TÜV AUTOMOTIVE GMBH · UNTERNEHMENSGRUPPE TÜV SÜDDEUTSCHLAND · Sachverständiger Prüflabor DIN EN 45001 · TÜV AUTOMOTIVE

Officially recognized expert
Dipl. Ing. S. Teller

*eIRL*97/68EA*0053*05*

Garching, 27.05.2002

ATTACHMENT A

2002 Model Year
Engine Family 2CPXL12.0ESK
EC Type Approval No. eIRL*97/68EA/0053*04

Engine Code	Rated KW @ RPM	Peak Torque NM @ RPM	Peak Torque Fuel Delivery mm^3/stroke	Gaseous Emission - gm/kW-hr HC	CO	NOx	Part
**	384 @ 2100	2199 @ 1400	328	0.145	1.53	4.65	0.1742
40	216 @ 2000	1572 @ 1000	224	0.2	1.2	5.6	0.12
41	201 @ 2000	1466 @ 1000	209	0.2	0.9	5.5	0.14
42	298 @ 2000	1765 @ 1400	242	0.2	0.7	5.6	0.08
43	298 @ 2100	1836 @ 1400	256	0.2	1.0	5.6	0.18
Stage II Nonroad Emissions Limits - 130-560 kW				1.0	3.5	6.0	0.20

** Parent Engine

p:\amipro\docs\jdm\EU120eskchart04.sam

1.15.3 Maximum charge air outlet temperature of the inlet intercooler (if applicable): 325 ..... K

1.15.4 Maximum exhaust temperature at the point in the exhaust pipe(s) adjacent to the outer flange(s) of the exhaust manifold(s): 1035 ..... K

1.15.5 Lubricant temperature: minimum: 368 ..... K

: maximum: 398 ..... K

1.16 Pressure charger: yes/~~no~~ (1)

1.16.1 Make: Garrett .....

1.16.2 Type: Turbocharger - exhaust driven centrifugal Part No. 1915108 *or 2033376* .....

1.16.3 Description of the system (e.g. max. charge pressure, waste-gate, if applicable): Exhaust driven, centrifugal .....

1.16.4 Intercooler: yes/~~no~~ (1)

1.17 Intake system: maximum allowable intake depression at rated engine speed and at 100% load: Clean Air 3.7 ..... kPa

1.18 Exhaust system: maximum allowable exhaust back pressure at rated engine speed and at 100% load: 6.7 ..... kPa

2. ADDITIONAL ANTI-POLLUTION DEVICES (if any, and if not covered by another heading)

--Description and/or diagram(s) Electronic .....

3. FUEL FEED

3.1 Feed pump

Pressure(2) or characteristic diagram: 785 Max ..... kPa

3.2 Injection system

3.2.1 Pump

3.2.1.1 Make(s): Caterpillar Inc. .....

3.2.1.2 Type(s): Part No. 1705242 *or 2123468* .....

3.2.1.3 Delivery 242 and 312 mm^3(2) per stroke or cycle at full injection at pump speed of 1050 rpm (rated) and 700 rpm (maximum torque) respectively, or characteristic diagram. (Fuel Rate Tolerances ±5%)

Mention the method used: On engine/~~on pump bench~~ (1)

3.2.1.4 Injection advance

3.2.1.4.1 Injection advance curve (2): None .....

3.2.1.4.2 Timing(2): Electronic Software Part No. 1930100 .....±1°.....

3.2.2 Injection piping

3.2.2.1 Length: Not Applicable ..... mm

3.2.2.2 Internal diameter: Not Applicable ..... mm

(1) Strike out what does not apply (2) Specify tolerance

3.2.3 Injector(s)

3.2.3.1 Make(s): Caterpillar Inc. .....

3.2.3.2 Type(s): Part No. 1705242 *or 2123468* .....

3.2.3.3 Opening pressure([1]) or characteristic diagram: 37,900 ± 2090 ..... kPa

3.2.4 Governor

3.2.4.1 Make(s): Caterpillar Inc. .....

3.2.4.2 Type(s): Electronic Software, Part No. 1930100 .....

3.2.4.3 Speed at which cut-of starts under full load([1]): 2100 .....rpm ± 10 rpm

3.2.4.4 Maximum no-load speed([1]): 2310 .....rpm ± 10 rpm

3.2.4.5 Idling speed([1]): 700 .....rpm ± 10 rpm

3.3 Cold start system

3.3.1 Make(s): Caterpillar Inc. .....

3.3.2 Type(s): Ether Aid.....

3.3.3 Description: Ether injection into the intake manifold .....

4. VALVE TIMING

4.1 Maximum lift and angles of opening and closing in relation to dead centres or equivalent data:

15.4 mm Max. Intake Lift / 12.4 mm Max. Exhaust Lift (Hot Lash) .....

4.2 ~~Reference and~~/or setting ranges([2]):

Intake Opening:	357.9 ° ATDC
Intake Closing:	567.3 ° ATDC
Exhaust Opening:	143.5 ° ATDC
Exhaust Closing:	366.2 °ATDC

([1]) Specify the tolerance.
([2]) Strike out what docs not apply.

Appendix 2

ESSENTIAL CHARACTERISTICS OF THE ENGINE FAMILY

1. COMMON PARAMETERS (1):

1.1. Combustion cycle: ***4 stroke*** .....

1.2. Cooling medium: ***Water*** .....

1.3. Method of air aspiration: ***Turbocharged - Air to Air Aftercooled*** .....

1.4. Combustion chamber type/design: ***Quiescent - Bullet Nose Crater*** .....

1.5. Valve and porting - configuration, size, and number: ***4 valves/cylinder*** .....

1.6. Fuel system: ***Direct Injection*** .....

1.7 Engine management systems:

Proof of identity pursuant to drawing number(s):

-- charge cooling system: ***Supplied by OEM*** .....

-- exhaust gas recirculation(2): ***Not Applicable*** .....

--water injection/emulsion (2): ***Not Applicable*** .....

-- Air injection (2): ***Not Applicable*** .....

1.8 Exhaust after-treatment system (2): ***Not Applicable*** .....

Proof of identical (or lowest for the parent engine) ratio: system capacity/fuel delivery per stroke, pursuant to diagram number (s):

(1) To be completed in conjunction with the specifications given in points 6 and 7 of Annex 1.
(2) If not applicable, mark n.a.

2. ENGINE FAMILY LISTING

2.1 Name of engine family: 1CPXL12.0ESK (The prefix "1" is a year code. This will alter in the following sequence: 1=2001, 2=2002, 3=2003, etc.) .....

2.2 Specification of engines within this family:

Engine Rating No.	*2*	*3*	*4*	*5*	Parent Engine(1)
Engine type	3196\C-12	3196\C-12	3196\C-12	3196\C-12	3196\C-12
No. of cylinders	6	6	6	6	6
Rated speed (rpm)	2100	2100	2100	2100	2100
Fuel delivery per stroke (mm^3) @ rated power	175	190	206	217	252
Rated net power (kW) as measured per 97/68/EC, Annex 1, Section 2.4	276	298	317	339	384
Maximum torque speed (rpm)	1400	1400	1400	1400	1400
Fuel delivery per stroke (mm^3) @ maximum torque	227	241	263	285	328
Maximum torque (Nm)	1627	1729	1830	1966	2199
Low idle speed (rpm)	700	700	700	700	700
Cylinder displacement (in % of parent engine)	100	100	100	100	100
Volumetric Compression Ratio	16.0:1	16.0:1	16.0:1	16.0:1	16.0:1
Injection Timing (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Advance (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Pump -Type	1705252 2037685	1705252 2037685	1705252 2037685	1705252 2037685	1705242 2123468
Injector - Type	1705252 2037685	1705252 2037685	1705252 2037685	1705252 2037685	1705242 2123468
Turbocharger - Make	Garrett	Garrett	Garrett	Garrett	Garrett
Turbocharger - Type	1941117	1941117	1915108 2033376	1915108 2033376	1915108 2033376
Governor - Type	Electronic	Electronic	Electronic	Electronic	Electronic
Governor - Speed at which cut-off starts under full load (rpm)	2100	2100	2100	2100	2100
Governor - maximum no-load speed (rpm)	2120	2120	2120	2120	2310
Maximum Exhaust Temp (K)	885	887	954	994	1044
Electronic Software	2015199	2015199	2015202	2015202	1930100
Fuel Ratio Control	Electronic	Electronic	Electronic	Electronic	Electronic
Maximum Charge Air Outlet Temperature of the Inlet Intercooler (K)	322	322	322	322	322
Maximum Fuel Feed Pump Pressure (kPa)	785	785	785	785	785

(1) For full details see Appendix 1.

2. 2 Specification of engines within this family (continued):

Engine Rating No.	*6*	*7*	*8 Chall 835*	*9 Chall 845*	Parent Engine(1)
Engine type	3196\C-12	3196\C-12	3196\C-12	3196\C-12	3196\C-12
No. of cylinders	6	6	6	6	6
Rated speed (rpm)	2100	2100	2100	2100	2100
Fuel delivery per stroke (mm^3) @ rated power	242	204	165	185	252
Rated net power (kW) as measured per 97/68/EC, Annex 1, Section 2.4	373	317	254	283	384
Maximum torque speed (rpm)	1400	1400	1400	1400	1400
Fuel delivery per stroke (mm^3) @ maximum torque	312	278	227	257	328
Maximum torque (Nm)	2135	1943	1678	1876	2199
Low idle speed (rpm)	700	700	1000	1000	700
Cylinder displacement (in % of parent engine)	100	100	100	100	100
Volumetric Compression Ratio	16.0:1	16.0:1	16.0:1	16.0:1	16.0:1
Injection Timing (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Advance (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Pump -Type	1705242 **2123468**	1705242 **2123468**	1705252 **2037685**	1705252 **2037685**	1705242 **2123468**
Injector - Type	1705242 **2123468**	1705242 **2123468**	1705252 **2037685**	1705252 **2037685**	1705242 **2123468**
Turbocharger - Make	Garrett	Garrett	Garrett	Garrett	Garrett
Turbocharger - Type	1915108 2033376	1915108 2033376	1915108 ***2033376***	1915108 ***2033376***	1915108 ***2033376***
Governor - Type	Electronic	Electronic	Electronic	Electronic	Electronic
Governor - Speed at which cut-off starts under full load (rpm)	2100	2100	2100	2100	2100
Governor - maximum no-load speed (rpm)	2120	2120	2300	2300	2310
Maximum Exhaust Temp (K)	1032	978	882	935	1044
Electronic Software	2015202	2015172	1925575	1925577	1930100
Fuel Ratio Control	Electronic	Electronic	Electronic	Electronic	Electronic
Maximum Charge Air Outlet Temperature of the Inlet Intercooler (K)	322	322	322	322	322
Maximum Fuel Feed Pump Pressure (kPa)	785	785	785	785	785

(1)For full details see Appendix 1.

2. 2 Specification of engines within this family (continued):

Engine Rating No.	*10*	*11*	*12*	*35*	Parent Engine(1)
Engine type	3196\C-12	3196\C-12	3196\C-12	3196\C-12	3196\C-12
No. of cylinders	6	6	6	6	6
Rated speed (rpm)	2200	2000	2100	1800	2100
Fuel delivery per stroke (mm^3) @ rated power	150	211	147	239	252
Rated net power (kW) as measured per 97/68/EC, Annex 1, Section 2.4	228	302	227	290	384
Maximum torque speed (rpm)	1400	1400	1400	1400	1400
Fuel delivery per stroke (mm^3) @ maximum torque	198	241	203	287	328
Maximum torque (Nm)	1439	1687	1435	2115	2199
Low idle speed (rpm)	700	800	950	1200	700
Cylinder displacement (in % of parent engine)	100	100	100	100	100
Volumetric Compression Ratio	16.0:1	16.0:1	16.0:1	16.0:1	16.0:1
Injection Timing (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Advance (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Pump -Type	1705252 2037685	1705252 2037685	1705252 2037685	1705253	1705242 2123468
Injector - Type	1705252 2037685	1705252 2037685	1705252 2037685	1705253	1705242 2123468
Turbocharger - Make	Garrett	Garrett	Garrett	Garrett	Garrett
Turbocharger - Type	1906214	1906216	1906215	1921469	1915108 2033376
Governor - Type	Electronic	Electronic	Electronic	Electronic	Electronic
Governor - Speed at which cut-off starts under full load (rpm)	2200	2000	2100	1800	2100
Governor - maximum no-load speed (rpm)	2500	2190	2270	1818	2310
Maximum Exhaust Temp (K)	856	872	888	906	1044
Electronic Software	1711141	1434840	2015174	*2124305*	1930100
Fuel Ratio Control	Electronic	Electronic	Electronic	Electronic	Electronic
Maximum Charge Air Outlet Temperature of the Inlet Intercooler (K)	322	322	322	322	322
Maximum Fuel Feed Pump Pressure (kPa)	785	785	785	785	785

(1)For full details see Appendix 1.

2. 2 Specification of engines within this family (continued):

Engine Rating No.	*36*	*37*	*38*	*39*	Parent Engine(1)
Engine type	3196\C-12	3196\C-12	3196\C-12	3196\C-12	3196\C-12
No. of cylinders	6	6	6	6	6
Rated speed (rpm)	1500	2100	2100	2100	2100
Fuel delivery per stroke (mm^3) @ rated power	246	217	187	206	252
Rated net power (kW) as measured per 97/68/EC, Annex 1, Section 2.4	216	339	298	328	384
Maximum torque speed (rpm)	1200	1400	1400	1400	1400
Fuel delivery per stroke (mm^3) @ maximum torque	311	285	256	283	328
Maximum torque (Nm)	2142	1966	1836	2019	2199
Low idle speed (rpm)	1100	700	1200	1200	700
Cylinder displacement (in % of parent engine)	100	100	100	100	100
Volumetric Compression Ratio	16.0:1	16.0:1	16.0:1	16.0:1	16.0:1
Injection Timing (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Advance (degree)	Electronic	Electronic	Electronic	Electronic	Electronic
Injection Pump -Type	1705253	1705242 **2123468**	1705242 **2123468**	1705242 **2123468**	1705242 **2123468**
Injector - Type	1705253	1705242 **2123468**	1705242 **2123468**	1705242 **2123468**	1705242 **2123468**
Turbocharger - Make	Garrett	Garrett	Garrett	Garrett	Garrett
Turbocharger - Type	1921469	1915108 2033376	1915108 2033376	1915108 2033376	1915108 **2033376**
Governor - Type	Electronic	Electronic	Electronic	Electronic	Electronic
Governor - Speed at which cut-off starts under full load (rpm)	1500	2100	2100	2100	2100
Governor - maximum no-load speed (rpm)	1515	2120	2184	2184	2310
Maximum Exhaust Temp (K)	906	994	927	968	1044
Electronic Software	*2134305*	2015202	2048072	2054343	1930100
Fuel Ratio Control	Electronic	Electronic	Electronic	Electronic	Electronic
Maximum Charge Air Outlet Temperature of the Inlet Intercooler (K)	322	322	322	322	322
Maximum Fuel Feed Pump Pressure (kPa)	785	785	785	785	785

(1)For full details see Appendix 1.

2. 2 Specification of engines within this family (continued):

Engine Rating No.	*40*	*41*	*42*	*43*	Parent Engine(1)
Engine type	*3196\C-12*	*3196\C-12*	*3196\C-12*	*3196\C-12*	3196\C-12
No. of cylinders	*6*	*6*	*6*	*6*	6
Rated speed (rpm)	*2000*	*2000*	*2000*	*2100*	2100
Fuel delivery per stroke (mm^3) @ rated power	*153*	*142*	*211*	*187*	252
Rated net power (kW) as measured per 97/68/EC, Annex 1, Section 2.4	*216*	*201*	*298*	*298*	384
Maximum torque speed (rpm)	*1000*	*1000*	*1400*	*1400*	1400
Fuel delivery per stroke (mm^3) @ maximum torque	*224*	*209*	*242*	*256*	328
Maximum torque (Nm)	*1572*	*1466*	*1765*	*1836*	2199
Low idle speed (rpm)	*800*	*800*	*800*	*1200*	700
Cylinder displacement (in % of parent engine)	*100*	*100*	*100*	*100*	100
Volumetric Compression Ratio	*16.0:1*	*16.0:1*	*16.0:1*	*16.0:1*	16.0:1
Injection Timing (degree)	*Electronic*	*Electronic*	*Electronic*	*Electronic*	Electronic
Injection Advance (degree)	*Electronic*	*Electronic*	*Electronic*	*Electronic*	Electronic
Injection Pump -Type	*1705252* *2037685*	*1705252* *2037685*	*1705252* *2037685*	*1705242* *2123468*	1705242 **2123468**
Injector - Type	*1705252* *2037685*	*1705252* *2037685*	*1705252* *2037685*	*1705242* *2123468*	1705242 **2123468**
Turbocharger - Make	*Garrett*	*Garrett*	*Garrett*	*Garrett*	Garrett
Turbocharger - Type	*2146091*	*2146091*	*1906216*	*1915108* *2033376*	1915108 **2033376**
Governor - Type	*Electronic*	*Electronic*	*Electronic*	*Electronic*	Electronic
Governor - Speed at which cut-off starts under full load (rpm)	*2000*	*2000*	*2000*	*2100*	2100
Governor - maximum no-load speed (rpm)	*2100*	*2100*	*2200*	*2184*	2310
Maximum Exhaust Temp (K)	*981*	*856*	*880*	*927*	1044
Electronic Software	*2046652*	*2046652*	*2111851*	*2228531*	1930100
Fuel Ratio Control	*Electronic*	*Electronic*	*Electronic*	*Electronic*	Electronic
Maximum Charge Air Outlet Temperature of the Inlet Intercooler (K)	*322*	*322*	*322*	*322*	322
Maximum Fuel Feed Pump Pressure (kPa)	*785*	*785*	*785*	*785*	785

(1)For full details see Appendix 1.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
2024 MODEL YEAR
CERTIFICATE OF CONFORMITY
WITH THE CLEAN AIR ACT

OFFICE OF TRANSPORTATION AND AIR QUALITY
ANN ARBOR, MICHIGAN 48105

Certificate Issued To: **Caterpillar Inc.**
(U.S. Manufacturer or Importer)

Certificate Number: RCPXL09.3NTF-001

Effective Date: 04/18/2023

Expiration Date: 12/31/2024

Byron J. Bunker, Division Director
Compliance Division

Issue Date: 04/18/2023

Revision Date: N/A

Model Year: 2024
Manufacturer Type: Original Engine Manufacturer
Engine Family: RCPXL09.3NTF

Mobile/Stationary Indicator: Both
Emissions Power Category: 130<=kW<=560
Fuel Type: Diesel
After Treatment Devices: Diesel Oxidation Catalyst, PTOX-DPF-Active, Ammonia Slip Catalyst, Selective Catalytic Reduction
Non-after Treatment Devices: Electronic Control, Engine Design Modification
FELs: PM 0.01 g/kW-hr

Pursuant to Section 111 and Section 213 of the Clean Air Act (42 U.S.C. sections 7411 and 7547) and 40 CFR Parts 60 and 1039, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following engines, by engine family, more fully described in the documentation required by 40 CFR Parts 60 and 1039 and produced in the stated model year.

This certificate of conformity covers only those new compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Parts 60 and 1039 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Parts 60 and 1039.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 1068 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Parts 60 and 1039. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void *ab initio* for other reasons specified in 40 CFR Parts 60 and 1039.

This certificate does not cover engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.

This certificate of conformity is conditional upon compliance of said manufacturer with the averaging, banking and trading provisions of 40 CFR Part 1039, Subpart H. Failure to comply with these provisions may render this certificate void *ab initio*.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

1999 Model Year Certificate of Conformity

Manufacturer:	**CATERPILLAR INC.**
Certificate Number:	**CPX-NRCI-99-24**
Effective Date:	**12/22/98**
Date Issued:	**12/22/98**

Jane Armstrong, Director, VPCD
Office Of Mobile Sources

Pursuant to Section 213 of the Clean Air Act (42 U.S.C. section 7547) and 40 CFR 89, and subject to the terms and conditions prescribed in those provisions, this certificate of conformity is hereby issued with respect to the test engines which have been found to conform to applicable requirements and which represent the following nonroad engines, by engine family, more fully described in the documentation required by 40 CFR Part 89 and produced in the stated model year.

Nonroad Diesel Engine Family: **XCPXL27.0HRP**

This certificate of conformity covers only those new nonroad compression-ignition engines which conform in all material respects to the design specifications that applied to those engines described in the documentation required by 40 CFR Part 89 and which are produced during the model year stated on this certificate of the said manufacturer, as defined in 40 CFR Part 89. This certificate of conformity does not cover nonroad engines imported prior to the effective date of the certificate.

It is a term of this certificate that the manufacturer shall consent to all inspections described in 40 CFR 89.129-96 and 89.506-96 and authorized in a warrant or court order. Failure to comply with the requirements of such a warrant or court order may lead to revocation or suspension of this certificate for reasons specified in 40 CFR Part 89. It is also a term of this certificate that this certificate may be revoked or suspended or rendered void ab initio for other reasons specified in 40 CFR Part 89.

This certificate does not cover nonroad engines sold, offered for sale, or introduced, or delivered for introduction, into commerce in the U.S. prior to the effective date of the certificate.