State of California
AIR RESOURCES BOARD

EXECUTIVE ORDER U-R-2-97
Relating to Certification of New Off-Road Compression-Ignition Equipment Engines

CUMMINS ENGINE COMPANY, INC.

Pursuant to the authority vested in the Air Resources Board (Board) by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-45-9;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engine and exhaust emission control system produced by the manufacturer are certified as described below for use in off-road equipment:

Model Year: 2001

Typical Equipment Usage: Crane, Loader, Pump, Generator, and Other Industrial Equipment

Fuel Type: Diesel

Engine Family	Engine Displacement (liters)	Useful Life (hours)	Exhaust Emission Control Systems and Special Features
1CEXL019.AAB	19.0	8000	Direct Diesel Injection Turbocharger Charge Air Cooler Engine Control Module

Engine models and codes are listed on attachments. Production engines shall be in all material respects the same as those for which certification is granted.

The exhaust emission certification standards and certification values for total hydrocarbons (THC), carbon monoxide (CO), oxides of nitrogen (NOx), and particulate matter (PM) (units are expressed in grams per kilowatt-hour (g/kw-hr)), and the opacity-of-smoke certification standards and certification values in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family are as follows (Title 13, California Code of Regulations, Section 2423(b)(1) and 2423(b)(3)(B), as amended by Board approval on January 28, 2000):

Engine Power Rating (kw)	Emission Standard Category		Exhaust Emissions (g/kw-hr)				Smoke Opacity (%)		
			THC	CO	NOx	PM	Accel	Lug	Peak
450≤KW≤560	Tier 1	Standard	1.3	11.4	9.2	0.54	20	15	50
560<KW	Tier 1	Standard	1.3	11.4	9.2	0.54	20	15	50
All Above		Certification	0.5	2.0	8.1	0.29	15	7	25

BE IT FURTHER RESOLVED: That, at the request of the manufacturer, the listed engine models are **conditionally certified** to, and shall be required to comply with, all amendments to Title 13, California Code of Regulations, Sections 2420 through 2427 adopted by the Board on January 28, 2000 at its hearing "TO CONSIDER AMENDMENTS TO OFF-ROAD COMPRESSION-IGNITION ENGINE REGULATIONS: 2000 AND LATER EMISSION STANDARDS, COMPLIANCE REQUIREMENTS AND TEST PROCEDURES." The listed engine models comply with all such amendments, including, but not limited to:

- the amended "Emission Control Labels—1996 and Later Off-Road Compression-Ignition Engines" (Title 13, California Code of Regulations, Section 2424) for the aforementioned model year;
- the Board's amended emission control system warranty provisions (Title 13, California Code of Regulations, Sections 2425 and 2426) for the listed engine models, as demonstrated by materials submitted by the manufacturer; and
- new California requirements for the Selective Enforcement Audit (SEA) for the listed engine models, as demonstrated by the manufacturer's submission of materials.

BE IT FURTHER RESOLVED: That the conditional certification described in the paragraph above is conditioned on the amendments being approved by the California Office of Administrative Law (OAL) pursuant to Government Code Section 11349.3, and where necessary, authorized by the Administrator of the U. S. Environmental Protection Agency (U.S. EPA) pursuant to Section 209(e)(2) of the Federal Clean Air Act. In the event that the OAL disapproves the amendments or the U.S. EPA decides not to authorize them, the ARB shall notify the manufacturer that the listed engine models must comply with the "California Exhaust Emission Standards and Test Procedures for 1996 and Later Heavy-Duty Off-Road Diesel Cycle Engines" (Title 13, California Code of Regulations, Sections 2420 through 2427) adopted on May 12, 1993, as applicable. Failure to demonstrate compliance within 45 days after notification by the Air Resources Board shall be cause for the Board to revoke the Executive Order and deem the listed engine models uncertified.

The conditional certification described herein is not conditioned on further U.S. EPA action on amendments determined by the Board to be within the scope of an existing U.S. EPA authorization.

Engines certified under this Executive Order must conform to the above requirements under Title 13, California Code of Regulations, Chapter 9, Article 4, and all other applicable California emission laws and regulations.

Executed at El Monte, California this 28th day of December 2000.

R. B. Summerfield, Chief
Mobile Source Operations Division

Engine Model Summary Form

Manufacturer: **Cummins Engine Company**

Engine category: **Nonroad Over 50 Hp**

EPA Engine Family: **1CEXL019.AAB**

Mfr Family Name: **B193**

Process Code: **New Submission**

1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
2009:FR4289	QSK19-C	755@1800	432	262	2275@1300	433	190	DDI, CAC, TC, ECM
2009:FR4191	QSK19-C	700@2100	349	247	2275@1300	433	190	TC,EC
2009:FR4203	QSK19-C	750@2100	370	262	2275@1300	433	190	TC,EC
2009:FR4228	QSK19-C	650@2100	319	226	2275@1300	433	190	TC,EC
2009:FR4230	QSK19-C	650@2000	337	227	2275@1300	433	190	TC,EC
2009:FR4233	QSK19-C	700@1800	406	246	2275@1400	423	200	TC,EC
2009:FR4238	QSK19-C	675@2100	329	233	2275@1300	433	190	TC,EC
2009:FR4253	QSK19-C	630@1800	347	211	2275@1300	433	190	TC,EC
2009:FR4255	QSK19-C	700@2000	363	245	2275@1300	433	190	TC,EC
2009:FR4268	QSK19-C	635@2100	306	217	1747@1500	336	170	TC,EC
2009:FR4270	QSK19-C	700@2100	349	247	2185@1200	433	175	TC,EC
2009:FR4280	QSK19-C	640@1800	353	214	1950@1400	365	172	TC,EC
2009:FR4281	QSK19-C	650@1800	359	218	2275@1300	433	190	TC,EC
2009:FR4308	QSK19-C	660@2100	320	227	2000@1500	370	187	TC,EC
2009:FR4330	QSK19-C	750@2100	370	262	2202@1300	420	184	TC,EC
2009:FR4331	QSK19-C	800@2100	407	288	2275@1300	433	190	TC,EC
2009:FR4333	QSK19-C	675@1800	372	226	2275@1300	433	190	TC,EC
2009:FR4335	QSK19-C	650@1900	340	218	1935@1300	367	161	TC,EC
2009:FR4336	QSK19-C	635@1900	334	214	2275@1300	433	190	TC,EC
2009:FR4337	QSK19-C	800@1900	429	275	2275@1300	433	190	TC,EC
2418:FR4357	QSK19-C	650@2100	321	227	2200@1400	431	203	TC,EC
2559:FR4297	QSK19-C	700@2100	339	240	2275@1300	433	190	TC,EC
2559:FR4327	QSK19-C	675@2100	326	231	2275@1300	433	190	TC,EC
2559:FR4328	QSK-19-C	650@2100	316	224	2275@1300	433	190	TC,EC
2559:FR4329	QSK19-C	750@2100	370	262	2275@1300	433	190	TC,EC
2559:FR4351	QSK19-C	640@1800	351	213	1950@1400	366	173	TC,EC
2559:FR4353	QSK19-C	700@1800	382	232	2275@1400	426	201	TC,EC
2559:FR4354	QSK19-C	800@2100	402	285	2275@1300	433	190	TC,EC

2559:FR4355	QSK19-C	675@1800	365	2[illegible]	2275@1300	433	190	DDJC	,ECM
2559:FR4356	QSK19-C	755@1800	415	252	2275@1300	433	190		TC,EC
2559:FR4358	QSK19-C	635@2100	306	217	1747@1500	327	165.5		TC,EC
2559:FR4360	QSK19-C	650@1800	353	214	2275@1300	433	190		TC,EC
2559:FR4361	QSK19-C	650@1900	339	217	1935@1300	370	162		TC,EC
2559:FR4362	QSK19-C	635@1900	331	212	2275@1300	433	190		TC,EC
2559:FR4368	QSK19-C	700@2000	354	239	2275@1300	433	190		TC,EC
2559:FR4369	QSK19-C	800@1900	425	272	2275@1300	433	190		TC,EC
2559:FR4370	QSK19-C	660@2100	318	225	2000@1500	368	186		TC,EC
2559:FR4371	QSK19-C	650@2100	316	224	2275@1300	433	190		TC,EC

ATTACHMENT

U-R-2-44