

ATTACHMENT 1

Certification Summary Sheet: (2 pages)

- Blank Form in Word 97 format
- Sample as printed (and can be used in lieu of the Word 97 form) from entries that were entered for the Access 97 Certification Database Form (see Attachment 2).

Supplemental Information Formats (8 pages)

AIR RESOURCES BOARD CERTIFICATION SUMMARY OFF-ROAD LSI ENGINES
MODEL-YEAR _____ MANUFACTURER: _____ EXECUTIVE ORDER: U-L- _____.
_____ Emission-Compliant Engines: fill in 1-11 _____ Emission Non-Compliant Engines: fill in 1-8

1. **Engine Family (EF) Name:** a. EPA-Standardized: _____
 b. EF Name on Engine Label: _____ c. Trade Name (e.g., Vortec): _____
2. **Equipment Applications:** (list all applicable) _____ **A** = Fork Lift **B** = Turf Care **C** = Generator
D = Sweeper **E** = Compressor **F** = Refrigeration < 50 hp **G** = Tractor **O** = Other _____ **P** = Pre-Empted Eqmt
3. **All Engine Sales Codes within EF:**(check all applicable) California-Only _____ 50-State _____ 49-State Only _____
4. **Production Engine Assembly** (as leaving the Certifying Manufacturer's factory): (list all applicable) _____
A = complete engine without equipment **B** = complete engine integrated with equipment **C** = incomplete engine (i.e., catalytic converter and / or exhaust system to be installed by OEM per Certifying Manufacturer's specifications and agreement. The Certifying Manufacturer is still held liable if these engines are not completed as described in its application for certification.)
5. **All Engine Displacement in EF:** (in liters, L) 1) _____ 2) _____ 3) _____ 4) _____
6. **Rated Power within Engine Family:** (in HP): Highest Model: _____ Lowest Model: _____
7. **Engine Design:** a. Combustion Cycle: (check one) 4-stroke _____ 2-stroke _____ @ Oil/Fuel Ratio _____
 b. Engine Type: (check one) Reciprocating _____ Rotary _____ Other (e.g., turbine, etc.) (specify) _____
 c. Valvetrain: (check one) Overhead _____ Side _____ Reed Valve _____ Piston Ported _____ Other (specify) _____
 d. Total Number of Intake and Exhaust Valves (Ports) per Cylinder: 2 _____ 3 _____ 4 _____ 5 _____ Other (specify) _____
 e. Type of Engine Cooling: (check one) Air _____ Water _____ Oil _____ Other (specify) _____
 f. Number of Cylinders: (check one) 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 8 _____ 10 _____ 12 _____ 16 _____ Other (specify) _____
 g. Cylinder Arrangement: (check one) Inline _____ Vee _____ Hori.Opposed (Flat) _____ Other (specify) _____
 h. Operating Fuel: (An EF may have engine models that operate on different fuels. **Example 1:** EF 123 has Models ABC and DEF that are dedicated gasoline engines. For EF 123, the "1" check box in (i) and "Dedicated" check box in (ii) are checked and "Gas" is filled in (iii). **Example 2:** Within EF 456 are Model GHI that is a dedicated gasoline engine and Model JKL that is a dedicated LPG engine. For EF 456, the "2" check box in (i) and "Dedicated" check box in (ii) are checked and "Gas" and "LPG" are filled in (iii).)
 (i) Number of Fuel Systems in EF: (check one) 1 _____ 2 _____ 3 _____ 4 _____ 5 _____
 (ii) Fuel System Types: (check all applicable) Dedicated _____ Flexible Fuel _____ Dual Fuel _____ Bi Fuel _____
 (iii) Fuel: (specify **Gasoline**, Liquefied Petroleum Gas (**LPG**, **Propane**), Natural Gas (**CNG**, **LNG**)) _____
8. **Intake, Fuel and Emission Control Systems**¹: _____
9. **Deterioration Factors (DFs):** a. New Durability Testing: Yes _____ No _____ Carryover from EF: _____
 b. Durability Engine Model: _____ ID: _____ Service Accumulation Hours: _____
 c. DF Type: (check one) Multiplicative (no less than 1.000; no units) _____ Additive (no less than 0.000; in g/bhp-hr) _____
 d. DF Values: HC: _____ NOx: _____ HC+NOx: (optional) (for additive DF only) _____ CO: _____
10. **Certification Test Engine Information:** New Test _____ Carryover from Engine Family _____
 a. Test Engine: Model _____ ID: _____ Rated Power, HP: _____ @ _____ rpm.
 Break-in/Stabilization Hours: _____ Test Dates: _____
 b. Test Fuel: (i) Gasoline: Indolene Clear _____ Calif. Ph2 _____ Other (specify) _____
 (ii) LPG, Propane, CNG or LNG: ARB Test Procedure Specs. _____ Approved Alternative Specs. _____
 c. Test Procedure (TP): (i) Sampling Method: Raw Gas Method (RGM) _____ Constant Volume Sampling (CVS) _____
 (ii) Test Cycle: "C": _____ "D": _____ "G-1": _____ Approved Modified "C": _____ Modified "D": _____ Modified "G-1": _____
 Approved Alternative or Special Cycle: (specify) _____ (iii) Special Test Equipment (e.g., cooling fans, special couplings, etc.): No _____ Yes/Describe: _____
11. **Certification Emission Levels** (in g/bhp-hr): HC+NOx _____ CO _____
 (Enter level from confirmatory test, if any. If none, enter the highest value from all tests below.)
 in compliance with **Emission Standards** of: (in g/bhp-hr) HC+NOx _____ CO _____
 for a **Durability Period** of: (check one) 1000 Hours _____ 3500 Hours _____ 5000 Hours _____ Other / Specify: _____

Test No. And Type ²	Official Test Results, g/bhp-hr				Deteriorated Certification Emissions, g/bhp-hr (i.e., with DFs applied)			
	HC	NOx	HC+NOx	CO	HC	NOx	HC+NOx	CO
1								
2								
3								
4								

Production Line Testing: CumSum _____ 1% _____ **Issue Date:** _____ **Revision Date:** _____
Remarks: _____

FOR ARB USE ONLY. Processed by: _____ Date: _____ Reviewed by: _____ Date: _____
--

¹ Use SAE J1930 abbreviations. Examples: **NA** for natural aspiration; **TC** turbocharging; **SC** supercharging; **CAC** charge air cooling; **CARB** carburetion; **TBI** throttle body fuel injection; **MPI** multipoint fuel injection; **SMPI** sequential MPI; **DGI** direct gasoline injection; **AIR** secondary air injection; **PAIR** pulsed AIR; **EGR** exhaust gas recirculation; **O2S** oxygen sensor; **HO2S** heated O2S; **OC** for oxidation catalyst; **TWC** three-way catalyst; **OC+TWC** for OC plus TWC in one container; **EM** for Engine Modification (use if only **NA** and/or **CARB** are the only other selections in the field).

Use prefix "2" or "3" etc. in front of O2S, TWC, etc. to designate **parallel** arrangement, e.g., 2TWC for two TWC in parallel. Use suffix "2" or "3" etc. to designate **series** arrangement, e.g., TWC-3 for three TWC in three separate containers, one after the other.

² Enter **C** for certification test, **RT** for confirmation retest, and **RC** for running change testing, **g** for gasoline fuel, **lpg** for lpg or propane fuel, and **cng** for natural gas (CNG or LNG) fuel.

AIR RESOURCES BOARD CERTIFICATION SUMMARY OFF-ROAD LSI ENGINES
MODEL-YEAR _____ MANUFACTURER: _____ EXECUTIVE ORDER: U-L- _____.
____ Emission-Compliant Engines: fill in 1-11 _____ Emission Non-Compliant Engines: fill in 1-8

Model Year: _____
Manufacturer Name: _____
Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
Issued: _____
Revised: _____
E.O.#: _____

S09. CATALYTIC CONVERTER: Yes ____ No ____

- a. Type/Number/Arrangement (e.g., TWC, OC, 2TWC for 2 parallel, TWC-2 for 2 in series): _____
- b. Location (e.g., close coupled, exhaust manifold, muffler): _____
- c. Catalyst Manufacturer.: _____
- d. Substrate: (i) Volume: _____ cc (ii) Construction: Pellet ____ Honeycomb ____
Number of cells: _____ (per cm²)
(iii) Composition: Ceramic ____ Metallic ____ (iv) Containment Method: Wire mesh ____ Other (specify) ____
- e. Active Material:

Composition (Pt, Pd, Rh): _____ Ratio: _____ Loading (g/L) _____
--

CONFIDENTIAL

S10. PROJECTED SALES AND PRODUCTION PERIOD

CONFIDENTIAL

- a. Projected California Annual Sales (units): _____ Projected 50 State Sales (units): _____
- b. Estimated Production Period: Start Date: _____ End Date: _____
- c. Estimated Introduction into Commerce Date: _____

S11. MANUFACTURER'S AUTHORIZED CONTACTS

Certification Contact

Name: Title: Address: Telephone Number: Fax Number: E-Mail Address:
--

Recipient of Executive Order

Name: Title: Address: Telephone Number: Fax Number: E-Mail Address:
--

Plant Contact

Name: Title: Address: Telephone Number: Fax Number: E-Mail Address:
--

Plant Contact

Name: Title: Address: Telephone Number: Fax Number: E-Mail Address:
--

Model Year: _____
Manufacturer Name: _____
Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
Issued: _____
Revised: _____
E.O.#: _____

S21. EMISSION-RELATED PART NUMBERS

(Part numbers as stamped on the component, not the stock or inventory numbers, should be listed here.)

		S11. Engine Model				
Fuel System:						
Carb/Mixer Assy.						
Fuel Injector						
Fuel Pump						
ECM						
Pressure Regulator						
Oxygen Sensor						
Other (specify)						
Intake System:						
Air Cleaner Element						
Intake Manifold						
Turbocharger						
Supercharger						
Charge Air Cooler						
Other (specify)						
Ignition System:						
Spark Plug						
Ignition Coil						
Ignition Control Valve Module						
Distributor						
Other (specify)						
EGR:						
EGR Valve Assembly						
Vacuum Control Valve						
Air Injection						
Control Valve						
Check Valve						
Solenoid Valve						
Aftertreatment System:						
Catalyst						
Exhaust Manifold						
Crankcase System:						
PCV Valve						

Model Year: _____
Manufacturer Name: _____
Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
Issued: _____
Revised: _____
E.O.#: _____

S22. LABELING:

a. Emission label format approved? No ___ Yes ___ If yes, reference approval: _____
Sample label attached? No ___ Yes (put label in #S24) ___

S23. WARRANTY: Emission warranty approved? No ___ (Provide full warranty statement in #S24)
Yes ___ (Reference approval: _____)

Have any changes been made since the last approval?
No ___ Yes ___ If yes, provide an explanation of the changes:

Model Year: _____
Manufacturer Name: _____
Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
Issued: _____
Revised: _____
E.O.#: _____

S24. ADDITIONAL INFORMATION AND COMMENTS

Model Year: _____
 Manufacturer Name: _____
 Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
 Issued: _____
 Revised: _____
 E.O.#: _____

ATTACHMENT 2

CERTIFICATION DATABASE FORM

The certification database form closely follows the Certification Summary described in Attachment 1. The database form is an **Access 97** file; the **electronic version** of this form can be **obtained by contacting your assigned ARB Certification Section staff person**. An imprint of this database form is enclosed for information purposes (only for hard copy mailings of this guidance). In the Access 97 file, the light blue fields indicate fill-in boxes, dark blue fields indicate pull-down menus and red fields indicate they are “reserved for ARB use only. The optimal screen viewing setting for your computer display is 600 x 800 pixels on 256-colors or better.

After **completing** and **verifying** this database form for each engine family, the manufacturer should (1) print a **hard copy** and submit it in lieu of the Certification Summary form described in Attachment 1 (which is a Word 97 document) as part of the engine family’s certification application package, and (2) **electronically send** the certification database information to its assigned Certification staff person.

Below is a list of the information fields that manufacturers must provide in order to complete an application for certification. **Incorrect or missing information will render the application incomplete and result in a certification delay.** The fields below are numbered in the order encountered when one fills in the Certification Database Form.

Field	Reserved for ARB Use Only	Pull-Down Menu	Fill-In/Describe
1. Model Year		<input checked="" type="checkbox"/>	
2. Application Type		<input checked="" type="checkbox"/>	
3. Manufacturer		<input checked="" type="checkbox"/>	
4. EO No.	<input checked="" type="checkbox"/>		
5. Emission Compliant EF?		<input checked="" type="checkbox"/>	
6. Engine Family Name			12 alphanumeric characters
7. EF Name on Engine Label			12 alphanumeric characters
8. Trade Name			Up to 32 alphanumeric characters
9. Equipment Applications (six pulldown fields)		<input checked="" type="checkbox"/>	
10. Sales Code		<input checked="" type="checkbox"/>	
11. EF CA Projected Sales			Up to 10 digits
12. EF US Projected Sales			Up to 10 digits
13. Production Engine Assembly		<input checked="" type="checkbox"/>	
14. Engine_Displace_x (five fill-in fields)			xxxx.xxx (in cc)
15. Highest Power (in hp)			xxx.xxx (in hp)
16. Lowest Power (in hp)			xxx.xxx (in hp)
17. Engine Models			Up to 200 alphanumeric characters
18. Combustion Cycle		<input checked="" type="checkbox"/>	

Model Year: _____
 Manufacturer Name: _____
 Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
 Issued: _____
 Revised: _____
 E.O.#: _____

Field	Reserved for ARB Use Only	Pull-Down Menu	Fill-In/Describe
19. Oil/Fuel Ratio			Up to 10 alphanumeric characters (e.g., 40:1, 50:1); enter "N/A" for 4-strokes
20. Engine Type		<input checked="" type="checkbox"/>	
21. Valvetrain		<input checked="" type="checkbox"/>	
22. Valve (Ports)/Cylinder		<input checked="" type="checkbox"/>	
23. Cooling Medium		<input checked="" type="checkbox"/>	
24. # of Cylinders		<input checked="" type="checkbox"/>	
25. Cylinder Arrangement		<input checked="" type="checkbox"/>	
26. Fuel System Configuration		<input checked="" type="checkbox"/>	
27. # of Fuel System		<input checked="" type="checkbox"/>	
28. Operating Fuel		<input checked="" type="checkbox"/>	
29. ECS_Cat		<input checked="" type="checkbox"/>	
30. ECS_O ₂ S		<input checked="" type="checkbox"/>	
31. ECS_fuelsys1		<input checked="" type="checkbox"/>	
32. ECS_fuelsys2		<input checked="" type="checkbox"/>	
33. ECS_fuelsys3		<input checked="" type="checkbox"/>	
34. ECS_egr		<input checked="" type="checkbox"/>	
35. ECS_asp		<input checked="" type="checkbox"/>	
36. ECS_air		<input checked="" type="checkbox"/>	
37. ECS_em:		<input checked="" type="checkbox"/>	Use "EM" only when CARB (carburetor) fuel system and NA (natural aspiration) are the only other information. Use "*" otherwise.
38. New Durability Testing?		<input checked="" type="checkbox"/>	
39. Durability Carryover EF Name			12 alphanumeric characters; enter "N/A" if #38 is "Yes"
40. Durability Engine Model			Up to 32 characters
41. Durability Engine ID Number			Up to 32 characters
42. Service Accumulation Hours			xxx.xxx (in hours)
43. DF_Type		<input checked="" type="checkbox"/>	
44. xxHC_DF			xx.xxx
45. NOx_DF			xx.xxx
46. xxHC+NOx_DF			xx.xxx (This is optional and for additive DF type only.)
47. CO_DF			xx.xxx
48. CERT_EDE_type		<input checked="" type="checkbox"/>	
49. Emission Carryover Engine Family Name			12 alphanumeric characters; enter "N/A" if #48 is "NEW"

Model Year: _____
 Manufacturer Name: _____
 Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
 Issued: _____
 Revised: _____
 E.O.#: _____

50. Cert_engine model			Up to 32 characters
Field	Reserved for ARB Use Only	Pull-Down Menu	Fill-In/Describe
51. Cert_engine_id			Up to 32 characters
52. Rated Power (hp)			xxx.xxx (in hp)
53. @ Rated_rpm			Up to 5 digits; no decimals
54. Cert_engine_stabilization_hours (for certification emission test)			Up to 3 digits
55. cert_test_date			month/date/year (e.g., 06/19/00 for June 19, 2000)
56. Certification Test Fuel		<input checked="" type="checkbox"/>	
57. Certification Test Procedure		<input checked="" type="checkbox"/>	
58. Certification Test Cycle		<input checked="" type="checkbox"/>	
59. Cert_TP: List all special test equipment...			Up to 200 alphanumeric characters
60. HC+Nox_Hi (Certification Level)			xxx.xxx (in g/bhp-hr); (Enter level from confirmatory test, if any. If none, enter highest value from all certification tests for this EF.)
61. CO_Hi (Certification Level)			xxx.xxx (in g/bhp-hr), (Enter level from confirmatory test, if any. If none, enter highest value from all certification tests for this EF.)
62. HC+Nox_standard			xxx.x (in g/bhp-hr)
63. CO_standard			xxx.x (in g/bhp-hr)
64. Emission Standard Durability Period			xxxx.x (in hours); enter "0" for emission compliance phase-in and non-compliant EFs.
65. TEST_SET_x; (_x-denotes upto 4 sets of data, if applicable)		<input checked="" type="checkbox"/>	
66. HC_x; (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp-hr)
67. Nox_x; (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp -hr)
68. HC+Nox_x; (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (This is optional and for additive DF only.)

Model Year: _____
 Manufacturer Name: _____
 Engine Family: _____
OFF-ROAD LSI ENGINE SUPPLEMENTAL INFORMATION

Page: _____
 Issued: _____
 Revised: _____
 E.O.#: _____

69. CO_x; (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp-hr)
Field	Reserved for ARB Use Only	Pull-Down Menu	Fill-In/Describe
70. HC_x (Deteriorated); (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp-hr)
71. Nox_x (Deteriorated); (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp-hr)
72. HC+Nox_x (Deteriorated); (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp-hr)
73. CO_x (Deteriorated); (_x-denotes upto 4 sets of data, if applicable)			xxx.xxx (in g/bhp-hr)
74. QA_Procedure		<input checked="" type="checkbox"/>	
75. Date_issued			month/date/year (e.g., 06/19/00 for June 19, 2000)
76. Date_revision			month/date/year (e.g., 06/19/00 for June 19, 2000)
77. Remarks			Up to 200 alphanumeric characters
78. Processed By:	<input checked="" type="checkbox"/>		
79. Process_Date	<input checked="" type="checkbox"/>		
80. Review By:	<input checked="" type="checkbox"/>		
81. Review_date	<input checked="" type="checkbox"/>		