# INDIVIDUAL ENGINE TEST DATA PER QUARTER FILE

| Sequence | Data Name | Type | Length | Range or Domain | Description | Reference* |
|---|---|---|---|---|---|---|
| 1 | QTR | C | 3 | 100 = Jan-Mar 2000<br>200= Apr-Jun 2000<br>300= Jul-Sep 2000<br>400= Oct-Dec 2000 | First Digit = Quarter Number<br>Second and Third Digit = Last two digits of calendar year | (c)(4)(E)(vii) |
| 2 | ENGFAM | C | 12 | Example: YXYZS.072ABC | 12-digit engine family name used at certification | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 3 | DISP | N | 4 | ex. 145<br>Range: 0 to 9999 | Engine displacement<br>[unit = cubic centimeters (cc)] | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 4 | ENGCODE | C | 15 | ex. XY123456AB-1234 | Manufacturer designated engine code or<br>calibration number of the test engine | (b)(5)(B)(iv), (c)(4)(E)(vii) |
| 5 | ENGID | C | 15 | ex. AB1234XY5678 | Manufacturer designated serial number or<br>other unique identification number of the test engine | (b)(5)(B)(ii), (c)(4)(E)(vii) |
| 6 | MODEL | C | 15 | ex. ST400 | Manufacturer designated engine/equipment<br>model name or model number | (b)(5)(B)(iv), (c)(4)(E)(vii) |
| 7 | RATEDHP | N | 2.2 | ex. 3.15<br>Range: 0 to 24.99 | Rated power of the test engine model as<br>certified [unit = horsepower (hp)] | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 8 | OBSHP | N | 2.2 | ex. 3.25<br>Range: 0 to 24.99 | Observed power of the test engine model at<br>100% load(interm,speed,cycle A; rated speed,<br>cycleB/C) [unit = horsepower (hp)] | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 9 | RATEDSP | N | 5 | ex. 9000<br>Range: 0 to 99999 | Rated speed of the test engine model as certified<br>[unit = revolutions per minute (rpm)] | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 10 | CARBSET | C | 2 | L = within lean third of limiter cap range<br>R = within rich third of limiter cap range<br>M = in the center third of limiter cap range<br>N = not adjustable or not applicable<br>P = preset | Mixture-adjustment setting(s) referring to three equally divided<br>sections of the adjustment range(s) of the limiter cap(s).<br>1 letter for single adjust<br>2 letters for low/hi adjust, 1st letter = low, 2nd letter = hi<br>ex. R single rich; RM rich is low, center is hi | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 11 | TESTCYCL | C | 1 | A : engine > 65 cc, intermediate speed<br>B : engine > 65 cc, rated speed<br>C : engine <= 65 cc<br>D : alternative engine cycle<br>E : special cycle | Test cycle used for this engine. The special cycle may be used<br>for compression-ignition engines. | (c)(4)(E)(vii) |
| 12 | TESTPRC | C | 1 | G = Raw Gas<br>V = CVS<br>P = Particulate Matter<br>X = Other Test Procedure | Emission sampling test procedure used for testing this engine | (c)(4)(E)(vii) |
| 13 | PRODSTRT | D | 10 | ex. July 20, 2000 = 2000/07/20<br>format:yyyy/mm/dd | 1st day of production for the batch from which the test engine<br>was taken | (b)(5)(B)(xi), (c)(4)(E)(x) |
| 14 | PRODEND | D | 10 | ex. Dec. 12, 2000 = 2000/12/12<br>format: yyyy/mm/dd | Last day of production for the batch from which the test engine<br>was taken | (b)(5)(B)(xi), (c)(4)(E)(x) |
| 15 | RUNIN | N | 2.2 | ex. 10.20 hours<br>Range: 0 to 12 hours | Total break-in time accumulated by this engine prior to the audit<br>test (including preconditioning) | (b)(5)(B)(iv), (c)(4)(E)(vii) |
| 16 | MFRPLANT | C | 4 | ex. MILW - Milwaukee plant | Abbreviated name/location of manufacturing plant | (b)(5)(B)(iv), (c)(4)(E)(i) |
| 17 | TESTLOC | C | 4 | ex. LA - Los Angeles Laboratory | Abbreviated name/location of test facility | (b)(5)(B)(iv), (c)(4)(E)(i) |
| 18 | BLDDATE | D | 10 | ex. January 12, 2000 = 2000/01/12<br>format: yyyy/mm/dd | Date when the engine/equipment was built | (c)(4)(E)(vii) |
| 19 | TESTDATE | D | 10 | ex. January 22, 2000 = 2000/01/22<br>format: yyyy/mm/dd | Date when the engine/equipment was tested | (b)(5)(B)(iv), (c)(4)(E)(vii) |
| 20 | HCNOX | N | 3.3 | ex. 7.424<br>Range: 0.000 to 999.999 | HC+NOx test result for this engine without DFs [unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 21 | HC | N | 4.2 | ex. 105.97<br>Range: 0.000 to 9999.99 | HC test result for this engine without DFs [unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 22 | CO | N | 4.3 | ex. 189.41<br>Range: 0.00 to 9999.999 | CO test result for this engine without DFs [unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 23 | NOX | N | 2.3 | ex. 2.520<br>Range: 0.000 to 99.999 | NOx test result for this engine without DFs [unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 24 | PM | N | 2.4 | ex. 0.1187<br>Range: 0.000 to 99.9999 | Particulate matter test result for this engine without DFs<br>[unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 25 | HCNOX+DF | N | 3.3 | ex. 7.524<br>Range: 0.000 to 999.999 | HC+NOx test result for this engine with DFs applied, as<br>applicable [unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 26 | CO+DF | N | 4.3 | Range: 0.000 to 9999.999 | CO test result for this engine with DFs applied, as applicable<br>[unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 27 | PM+DF | N | 2.4 | Range: 0.0000 to 99.9999 | Particulate matter test result for this engine with DFs applied,<br>as applicable<br>[unit = (g/hp-hr)] | (b)(5)(B)(v), (c)(4)(E)(vii) |
| 28 | FAIL | C | 1 | Y = YES<br>N = NO | Indicate if emission test failed applicable FEL or STANDARD | (b)(4)(A), (c)(3)(A)(viii) |

# INDIVIDUAL ENGINE TEST DATA PER QUARTER FILE

| Sequence | Data Name | Type | Length | Range or Domain | Description | Reference* |
|---|---|---|---|---|---|---|
| 29 | TESTSTAT | C | 2 | OK = useable test data<br>AV = average of multiple tests<br>RA = results to be averaged<br>IN = invalid test<br>AB = aborted test<br>RT = retest of failed engine<br>NT = not testable<br>NR = not reasonably operative<br>NS = not safe to test | Test status for this engine.<br>"OK" and "AV" flags data used for evaluation. "RA" is used to identify multiple tests for the same engine to be averaged. Report the reason(s) for aborting, invalidating retesting or not testing in the NOTES field of the initial test record. Report repairs in the REPAIRS field of the engine retest record. | (c)(4)(E)(vii) |
| 30 | TESTNUM | N | 2 | Range: 2 to 99 | Test number for the engine being retested | (c)(4)(E)(vii) |
| 31 | REPAIRS | C | 40 | ex. replaced spark plug or manufacturer designated repair code | Any repairs/adjustments/corrective measures performed on the engine. List specific components replaced or adjusted. Manufacturer may use repair codes explained in the Code Key File | (b)(5)(B)(vi), (c)(4)(E)(vii) |
| 32 | NOTES | C | 50 | ex. Test cell temperature too high<br>Manufacturer designated test-problem code. | Any comments:<br>Reason(s) for aborting, invalidating, retesting or not testing.<br>Any engine failure remedies or corrective actions.<br>Manufacturer may use test-problem code explained in the Code | (b)(5)(B)(vi), (c)(4)(E)(vii) |
| 33 | CSHCNOX | N | 3.3 | Range: 0.000 to 999.999 | Cum sum statistic for HCNOx for current test using test results with DFs applied, as applicable | (c)(4)(E)(vii), (c)(3)(A)(i) |
| 34 | HCNOX-N | N | 2 | Range: 0 to 30 | Sample size (N) calculated for cum sum procedure for HCNOX with DFs applied, as applicable | (c)(4)(E)(ii) |
| 35 | HCNOX-H | N | 3.2 | Range: 0.00 to 999.99 | Action Limit for HCNOX for current emission test | (c)(4)(E)(vii), (c)(3)(A) |
| 36 | HCNOXEXC | C | 1 | Y = YES<br>N = NO | Action limit exceedance for HCNOX | (c)(4)(E)(vii) |
| 37 | CSCO | N | 3.3 | Range: 0.000 to 999.999 | Cum sum statistic for CO for current test using test results with DFs applied, as applicable | (c)(4)(E)(vii) |
| 38 | CO-N | N | 2 | Range: 0 to 30 | Sample size (N) calculated for cum sum procedure for CO with DFs applied, as applicable | (c)(4)(E)(ii) |
| 39 | CO-H | N | 3.2 | Range: 0.00 to 999.99 | Action Limit for CO for current emission test | (c)(4)(E)(vii), (c)(3)(A) |
| 40 | COEXC | C | 1 | Y = YES<br>N = NO | Action limit exceedance for CO | (c)(4)(E)(vii) |
| 41 | CSPM | N | 3.3 | Range: 0.000 to 999.999 | Cum sum statistic for PM for current test using test results with DFs applied, as applicable | (c)(4)(E)(vii) |
| 42 | PM-N | N | 2 | Range: 0 to 30 | Sample size (N) calculated for cum sum procedure for PM with DFs applied, as applicable | (c)(4)(E)(ii) |
| 43 | PM-H | N | 3.2 | Range: 0.000 to 999.99 | Action Limit for PM for current emission test | (c)(4)(E)(vii), (c)(3)(A) |
| 44 | PMEXC | C | 1 | Y = YES<br>N = NO | Action limit exceedance for PM | (c)(4)(E)(vii) |
| 45 | CSSAMPSZ | N | 2 | Range: 0 to 30 | Maximum sample size (N) calculated for cum sum procedure for emission test results with DFs applied, as applicable | (c)(4)(E)(ii), (c)(4)(E)(vii) |

* Reference to Subsections of the California Code of Regulations, Title 13, Section 2407

# COMBINED QUARTERS ENGINE FAMILY FILE

| *Sequence* | *Data Name* | *Type* | *Length* | *Range or Domain* | *Description* | *Reference** |
|---|---|---|---|---|---|---|
| 1 | QTR | C | 3 | 100 = Jan-Mar 2000<br>200 = Apr-Jun 2000<br>300 = Jul-Sep 2000<br>400 = Oct-Dec 2000 | First Digit = Quarter number<br>Second and third digit = Last two digits of calendar year | |
| 2 | ENGFAM | C | 12 | Example: YXYZS.072ABC | 12-digit name for engine family from certification | (b)(5)(B)(iv), (c)(4)(E)(v) |
| 3 | CMQTRS | N | 1 | Example: 2<br>Range: 2 to 8 | Number of quarters combined to obtain at least 10 tests | (b)(4)(B) |
| 4 | CMCADIS | N | 5 | Example: 1235<br>Range: 0 to 99999 | Sum of California production numbers for the quarters combined to get at least 10 tests. | (b)(5)(B)(i) |
| 5 | CMPRDSZ | N | 6 | Example: 14122<br>Range: 0 to 999999 | Sum of total production numbers for the quarters combined to get at least 10 tests. | (b)(5)(B)(i) |
| 6 | CMSMPSZ | N | 4 | ex. 15<br>range: 0 to 9999 | Sum of the number of engines tested for the quarters combined to get at least 10 tests | (b)(5)(B)(i) |
| 7 | CMHCNXMN | N | 2.1 | ex. 8.1 rounded per ASTM-E-29-93a to number of significant digits in standard | Cumulative HC + NOx mean for the quarters combined to get at least 10 tests with DFs applied, as applicable (g/hp-hr) | (b)(5)(B)(vii) |
| 8 | CMHCNXSD | N | 2.4 | ex. 3.1430 | Cumulative HC+NOx standard deviation for the quarters combined to get at least 10 tests (g/hp-hr) with DFs applied, as | (b)(5)(B)(vii) |
| 9 | CMCOMN | N | 3.1 | ex. 201.1 rounded per ASTM-E-29-93a to number of significant digits in standard | Cumulative CO mean for the quarters combined to get at least 10 tests with DFs applied, as applicable (g/hp-hr) | (b)(5)(B)(vii) |
| 10 | CMCOSD | N | 3.3 | ex. 73.190 | Cumulative CO standard deviation for the quarters combined to get at least 10 tests (g/hp-hr) with DFs applied, as applicable | (b)(5)(B)(vii) |
| 11 | CMPMMN | N | 1.2 | ex. 0.21 rounded per ASTM-E-29-93a to number of significant digits in standard | Cumulative particulate matter mean for the quarters combined to get at least 10 tests with DFs applied, as applicable (g/hp-hr) | (b)(5)(B)(vii) |
| 12 | CMPMSD | N | 1.4 | ex. 0.0879 | Cumulative particulate matter standard deviation for the quarters combined to get at least 10 tests (g/hp-hr) with DFs applied, as applicable | (b)(5)(B)(vii) |

* Reference to Subsections of the California Code of Regulations, Title 13, Section 2407

## HARD COPY FORMAT
## COMBINED QUARTERS ENGINE FAMILY FILE

| QTR | ENGFAM | CMQTRS | CMCADIS | CMPRDSZ | CMSMPSZ | CMHCNXMN | CMHCNXSD | CMCOMMN | CMCOSD | CMPMMN | CMPMSD |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |

**NUMBERS IN PARENTHESIS INDICATE THE CORRESPONDING FIELD SEQUENCE NUMBER FROM THE COMBINED QUARTERS ENGINE FAMILY FILE.**

**CODE KEY FILE**

**Example of Key for Engine Identification Code**

| Code Type | Code | Description |
|---|---|---|
| ENGCODE | XXXXXXXX | Provide an index to decipher the engine code |
| ENGID | XXXXXXXXXXXX | Provide an index to decipher the engine identification (serial) number |
| MODEL | XXXXXXXXXXXXXXX | Provide an index to identify the engine/equipment application |

**Example of Key for Plant and Test Location Codes**

| Code Type | Code | Description |
|---|---|---|
| MFRPLANT | MILW | Manufacturing site in Milwaukee, Wisconsin |
| MFRPLANT | NASH | Manufacturing site in Nashville, Tennessee |
| TESTLOC | LA | Test Laboratory in Los Angeles, California |

**Example of Key for Repair and Test Problem Codes**

| Code Type | Code | Description |
|---|---|---|
| REPAIRS | RCAP | Reset limiter cap |
| REPAIRS | RSPL | Replaced spark plug |
| REPAIRS | SCRP | Engine scrapped |
| REPAIRS | RVAS | Replaced valve and machined valve seat |
| NOTES | FAIL | Emission exceeded standard(s) |
| NOTES | FIXD | Engine repaired and passed retest |
| NOTES | TCTH | Test cell temperature too high |
| NOTES | SSPL | Engine stalled due to spark plug failure |
| NOTES | SBVA | Engine stalled during break-in due to valve damage |

Attachment 9 provides an example of a Code Key File. The Key for Engine Identification Codes, the Key for Plant and Test Location Codes and the Key for Repair and Test Problem Codes refer to the Individual Engine Test Data Per Quarter and explain the codes reported in the ENGCODE, ENGID, MODEL fields, the MFRPLANT, TESTLOC fields and the REPAIRS, NOTES fields respectively. The information in the Code Key File should be presented in tabular form; however, the exact format used is not critical and is therefore not specified. Since the Key for Engine Identification Codes does not change quarterly, this information may be reported in the first quarter report of each calendar year or as changes to the codes occur.

| Table 1: SORE Manufacturer Code for Quality-Audit Report | |
|---|---|
| ***Manufacturer*** | ***Quality-Audit Code*** |
| Andreas Stihl | ASTL |
| Briggs & Stratton Corp. | BRST |
| A. L. Cook Co. | COOK |
| Daihatsu Motors Co., Ltd. | DAIH |
| Flex Systems, Inc. | FLEX |
| Ford Power Products | FORD |
| Fuji Heavy Industries Ltd. | FUJI |
| Fuji Robin Industries Ltd. | FURO |
| Generac Corp. | GENA |
| John Deere Consumer Equipment/Homelite | HMLT |
| Honda Motor Co., Ltd. | HOND |
| Husqvarna AB | HSQA |
| Impco Technologies | IMPC |
| Ishikawajima-Shibaura Machinery Co., Ltd. | ISMC |
| Isuzu Motors Ltd. | ISUZ |
| Kawasaki Motors Corp. | KAWA |
| Kioritz Corp. (Echo Incorporated) | KIOR |
| Klockner-Humbolt-Deutz AG | KLOC |
| Komatsu Zenoah Co. | KMTS |
| Kohler Generator Division | KOLG |
| Kohler Company | KOLR |
| Kubota Corp. | KUBO |
| Lawn-Boy | LABO |
| Lister-Petter, Inc. | LIPE |
| Lombardini U.S.A. Inc. | LOMB |
| Maruyama Mfg. Co., Inc. | MARU |
| McCulloch Corp. | MCUL |
| Mitsubishi Heavy Industries | MITH |
| Mitsubishi Motors Corporation | MITS |
| Makita U.S.A., Inc. | MKIT |
| Onan Corp. | ONAN |
| OPC/Floor Blazers | OPCF |
| Poulan/Weed Eater | PLWE |
| Polaris Industries | POLA |
| Ryobi Outdoor Products Inc. | RYOB |
| Shin-Daiwa Kogyo Co., Ltd. | SHIN |
| Solo Inc. | SOLO |
| Suzuki Motor Co. | SUZU |
| Tecumseh Products Company | TECU |
| Tanaka Kogyo Co., Ltd. | TNAK |
| Westerbeke Corporation | WEST |
| Wis-Con Total Power Corp. | WSCO |
| Yamaha Motor Co., Ltd. | YAMA |
| Yanmar Diesel Engine Co., Ltd. | YNMA |