United States
Environmental Protection
Agency

Office of Mobile Sources
Vehicle Programs and
Compliance Division

EPA

Initial Operating Version (IOV) Certification and Fuel Economy Information System (CFEIS) Input Data Record Layouts

JUNE 26, 1996

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PREFACE

This edition of the *Initial Operating Version (IOV) Certification and Fuel Economy Information System (CFEIS) Input Data Record Layouts* supersedes the Draft March 18, 1996 edition. This edition contains the Document Change Summaries for subsystem Input Data Record Layouts in Appendix A. These summaries reflect the changes to the Input Data Record Layouts as compared to the March 18, 1996 edition. Please note that the Temperature Profile Input Data Record Layout is not contained in this edition because of the recent regulatory changes being applied to the collection of Temperature Profile data.

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Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

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Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	F1	R	R	R	R	1-2	2	A	F1
Process Code	F1	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D' For *Reprocess*: 'S'
Manufacturer Code	F1	R	R	R	R	4-7	4	I	Valid MANUFACTURER CODE
Index Number	F1	R	R	R	R	9-11	3	I	001-999
Model Year	F1	R	R	R	R	13-16	4	I	1970-2100
Cubic Inch Displacement	F1	R	R			18-20	3	I	000-999
Number of Cylinders	F1	R	R			22-23	2	I	00-99
Combustion Cycle	F1	R	R			25-25	1	A	G - Otto Cycle (SI) Piston R - Otto Cycle (SI) Rotary D - Diesel Cycle (CI) 2 - Two Stroke Cycle T - Turbine H - Hybrid Electric E - Electric A - Other
Fuel Injection	F1	R	R			27-27	1	A	N - No S - Single M - Multi-point (Default for diesels)
Number of Venturi	F1	R	R			29-30	2	I	00 - 99 *Note:* Default is '00'.
Catalyst	F1	R	R			32-32	1	A	Y - Yes N - No *Note:* Default is 'Y'.

Transaction Type: R = Required X = Optional ' ' = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Feedback Fuel System	F1	R	R			34-34	1	A	Y - Yes N - No *Note:* Default is 'N'.
Variable Displacement	F1	R	R			36-36	1	A	Y - Yes N - No *Note:* Default is 'N'.
Turbocharged	F1	R	R			38-38	1	A	Y - Yes N - No C - Yes, with charge air cooling *Note:* Default is 'N'.
Supercharged	F1	R	R			40-40	1	A	Y - Yes N - No C - Yes, with charge air cooling *Note:* Default is 'N'.
Police Vehicle	F1	X	X			42-42	1	A	Y - Yes N - No *Note:* Default is 'N'.
Engine Block Descriptors	F1	R	R			44-53	10	A	Text *Note:* Default is 'Blank'.
Compliance Category	F1	R	R	R	R	55-55	1	A	1 - Domestic Passenger Vehicles 2 - Import Passenger Vehicles 7 - Domestic Trucks 8 - Import Trucks
Applicable Standard	F1	X	X			57-60	4 (3,1)	R	00.0-99.9
Input Record Type	F2	R	R			1-2	2	A	F2
Transmission Class	F2	R	R			4-5	2	I	01-99 Linkage field to 'FM' and 'FF' input records.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Number of Transmission Modes	F2	R	R			18-19	2	A	V - Continuously variable, user selectable C - Computer controlled multiple gear ratios 1-9 - Discrete user-selectable transmission mode N - Not Applicable *Note:* Default is 'N'.
Variable Lockup Point	F2	R	R			21-21	1	A	*N, blank* - No variable lock-up point V - Continuously variable C - Computer controlled lock-up 1-9 - Number of discrete lock-up rpm ranges
Declutching / Freewheeling	F2	R	R			23-23	1	A	Y - Yes N - No L - Yes, but with lock-out features *Note:* Default is 'N'.
Input Record Type	FM	R	R			1-2	2	A	FM
Manufacturer Code	FM	R	R			4-7	4	I	Valid MANUFACTURER CODE
Division Code	FM	R	R			9-10	2	I	Valid DIVISION CODE *Note*: Must be associated with a MANUFACTURER CODE.
Car Line Code	FM	R	R			12-14	3	I	Valid CAR LINE CODE
Transmission Class	FM	R	R			16-17	2	I	01-99 Linkage field to 'F2' and 'FF' input records.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Transmission Type	F2	R	R			7-8	2	A	C4 - Creeper/Manual 4 - speed M3 - Manual 3 - speed B3 - Both C4 & M3 C5 - Creeper/Manual 5 - speed M4 - No creeper/Manual 4 - speed B4 - Both C5 & M4 M5 - Manual 5 - speed M6 - Manual 6 - speed A3 - No lockup/automatic/3 - speed L3 - Lockup/automatic/3 - speed A4 - No lockup/automatic/4 - speed L4 - Lockup/automatic/4 - speed AV - Automatic variable gear ratios S2 - Semi-automatic 2 - speed S3 - Semi-automatic 3 - speed S4 - Semi-automatic 4 - speed S5 - Semi-automatic 5 - speed
Drive System	F2	R	R			10-10	1	A	4 - 4 wheel drive F - 2 wheel drive, front R - 2 wheel drive, rear
Transmission Overdrive	F2	R	R			12-12	1	I	1 - No gear ratio < 1 2 - Top gear ratio < 1 3 - Electronically operated overdrive 4 - Computer-controlled automatic electronic overdrive 5 - Computer-controlled automatic electronic overdrive with lockout switch
Shift Indicator Light	F2	R	R			14-14	1	A	Y - Yes N - No *Note:* Default is 'N'.
Engine Management System	F2	R	R			16-16	1	A	Y - Yes N - No L - Yes with lockout features *Note:* Default is 'N'.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Guzzler Exempt	FM	X	X			19-19	1	A	*blank* - Not exempt N - Not exempt 1 - Unloaded GVWR > 6000 lbs 2 - Emergency Vehicle 3 - IRS Alternative Rate Schedule 4 - Small volume manufacturer who lengthens an existing vehicle. *Note:* Default is 'N'.
Optional Displacement	FM	X	X			21-24	4	I	0000-9999
Optional Displacement Units	FM	X	X			26-26	1	A	C - Cubic Centimeters L - Liters
Fuel Usage	FM	X	X			28-28	1	A	R - Regular Unleaded P - Premium Unleaded D - Diesel C - Compressed Natural Gas *Note:* Default is 'D' if the combustion cycle is diesel otherwise default is 'R'.
Input Record Type	FR	R	R			1-2	2	A	FR
Transmission Configuration	FR	R	R			4-5	2	I	01-99 Linkage field to 'FF' and 'FL' input records.
Gear Range Number	FR	X	X			7-7	1	A	1-9 - Indicates gear range number O - Indicates ratios entered are normal gear ratios (O/D not engaged) N - Indicates ratios entered are O/D gear ratios (O/D engaged) L - Low-end range of gear ratios H - High-end range of gear ratios *Note*: Required if Gear Range data is entered.
Gear Ratio First	FR	X	X			9-13	5 (4,3)	R	0.000-9.999

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Gear Ratio Second	FR	X	X			15-19	5 (4,3)	R	0.000-9.999
Gear Ratio Third	FR	X	X			21-25	5 (4,3)	R	0.000-9.999
Gear Ratio Fourth	FR	X	X			27-31	5 (4,3)	R	0.000-9.999
Gear Ratio Fifth	FR	X	X			33-37	5 (4,3)	R	0.000-9.999
Gear Ratio Sixth	FR	X	X			39-43	5 (4,3)	R	0.000-9.999
Input Record Type	FL	R	R			1-2	2	A	FL
Transmission Configuration	FL	R	R			4-5	2	I	01-99 Linkage field to 'FR' and 'FF' input records.
Lock-up Range Number	FL	X	X			7-7	1	A	1-9 - Indicates lockup range number L - Low-end range of RPM's H - High-end range of RPM's *Note:* Required if Lock-up RPM data is entered.
Lock-up RPM First	FL	X	X			9-12	4	I	0000-9999
Lock-up RPM Second	FL	X	X			14-17	4	I	0000-9999
Lock-up RPM Third	FL	X	X			19-22	4	I	0000-9999
Lock-up RPM Fourth	FL	X	X			24-27	4	I	0000-9999
Lock-up RPM Fifth	FL	X	X			29-32	4	I	0000-9999
Lock-up RPM Sixth	FL	X	X			34-37	4	I	0000-9999
Input Record Type	FC	X	X			1-2	2	A	FC

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Comments	FC	X	X			3-80	78	A	Comments *Note*: Multiple comment input records permitted. 'Replace' deletes old comments and adds new comments, while 'Modify' adds additional input comments to previously stored comments if any.
Input Record Type	FF	R	R			1-2	2	A	FF
Manufacturer Code	FF	R	R			4-7	4	I	Valid MANUFACTURER CODE
Division Code	FF	R	R			9-10	2	I	Valid DIVISION CODE *Note*: Must be associated with a MANUFACTURER CODE.
Car Line Code	FF	R	R			12-14	3	I	Valid CAR LINE CODE
Transmission Class	FF	R	R			16-17	2	I	01-99 Linkage field to 'F2' and 'FM' input records.
DVC	FF	R	R			19-21	3	I	001-499: A portion of this configuration is represented by a test vehicle. 501-999: No portion of this configuration is represented by a test vehicle.
Transmission Configuration	FF	R	R			23-24	2	I	01-99 Linkage field to 'FR' and 'FL' input records.
Axle Ratio	FF	R	R			26-29	4 (3,2)	R	0.00-9.99
Engine Code	FF	R	R			31-44	14	A	Valid ENGINE CODE
RLC	FF	R	R			46-47	2	I	01-49: Used for subconfigurations represented by a test vehicle. 51-99: Used for subconfiguration not represented by a test vehicle.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
ETW	FF	R	R			49-53	5	I	Valid Equivalent Test Weight within a specified Inertia Weight Class as defined in paragraph § 86-129-80 of the 40 CFR.
RLHP	FF	R	R			55-58	4 (3,1)	R	00.0-99.9
Lockup Override	FF	R	R			60-60	1	A	Y - Yes N - No *Note:* Default is 'N'.
Altitude Code	FF	R	R			62-62	1	I	1 - Low altitude only 2 - High altitude only 3 - All altitudes *Note:* Default is '3'.
Engine Family Name	FF	R	R			64-75	12	A	Valid ENGINE FAMILY NAME
Sub-Configuration Sales	FF	R	R			77-82	6	I	000000-999999
Input Record Type	FT	R	R			1-2	2	A	FT
DVC	FT	R	R			4-6	3	I	001-499: A portion of this configuration is represented by a test vehicle. 501-999: No portion of this configuration is represented by a test vehicle.
RLC	FT	R	R			8-9	2	I	01-49: Used for subconfigurations represented by a test vehicle. 51-99: Used for subconfiguration not represented by a test vehicle.
Test Link Identifier	FT	X	X			11-11	1	A	A-Z, 1-9 *Note*: Logical link of repeating input test records.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Averaging Group Indicator	FT	X	X			13-13	1	A	A-Z, 1-9 *Note*: Links a group of City or Highway weighted group tests which may span multiple input records. This is only needed when spanning multiple input records for a group of city or highway tests.
City Highway Indicator	FT	X	X			15-15	1	A	C - City Test H - Highway Test
Test Group Weighting	FT	X	X			17-20	4 (3,2)	R	0.00-1.00
Test Number	FT	X	X			22-28	7	I	Valid existing test number
Input Record Type	FS	R	R	R	R	1-2	2	A	FS
Process Code	FS	X	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D' For *Reprocess*: 'S'
Manufacturer Code	FS	R	R	R	R	4-7	4	I	Valid MANUFACTURER CODE
Model Year	FS	R	R	R	R	9-12	4	I	1970-2100
Compliance Category	FS	R	R	R	R	14-14	1	A	1 - Domestic Passenger Vehicles 2 - Import Passenger Vehicles 7 - Domestic Trucks 8 - Import Trucks
Total Sales	FS	R				16-22	7	I	0000000-9999999
Average FE Unadjusted 4 Decimal	FS	R				24-30	7 (6,4)	R	00.0000-99.9999
Average FE Unadjusted 1 Decimal	FS	R				32-35	4 (3,1)	R	00.0-99.9

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Corporate Average Fuel Economy (CAFE)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Average FE Adjusted	FS	R				37-40	4 (3,1)	R	00.0-99.9
EOT Input Record Type Code	ZZ	R	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Car Line
Input Data Record Layout

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Car Line
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Modify	Transaction Type: Delete	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	C1	R	R	R	1-2	2	A	C1
Process Code	C1	X	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Delete*: 'D'
Manufacturer Code	C1	R	R	R	4-7	4	I	Valid MANUFACTURER CODE
Model Year	C1	R	R	R	9-12	4	I	1970-2100
Division Code	C1	R	R	R	14-15	2	I	Valid DIVISION CODE Note: Must be associated with a valid MANUFACTURER CODE.
Car Line Code	C1	R	R	R	17-19	3	I	Valid CAR LINE CODE *Note:* For *Add*, the CAR LINE CODE entered must not exist in the IOV CFEIS data base for the VI Manufacturer Code and Division Code.
Class Code	C1	X	X		21-22	2	A	01 - Two-seaters 02 - Minicompact Cars 03 - Subcompact Cars 04 - Compact Cars 05 - Midsize Cars 06 - Large Cars 07 - Small Station Wagons 08 - Midsize Station Wagons 09 - Large Station Wagons 10 - Small Pick-up Trucks 2WD 11 - Small Pick-up Trucks 4WD 12 - Standard Pick-up Trucks 2WD 13 - Standard Pick-up Trucks 4WD 14 - Vans, Cargo Types 15 - Vans, Passenger Type 16 - (Reserved) 17 - Special Purpose Vehicle 2WD 18 - Special Purpose Vehicle 4WD 19 - Special Purpose Vehicle Cab Chassis
Full Carline Name	C1	X	X		24-51	28	A	Text

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Car Line
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Modify	Transaction Type: Delete	Position	Length	Data Type	Valid Range/Entry Criteria
Abbr Carline Name	C1	X	X		53-73	21	A	Text
Domestic/Import Code	C1	X	X		75-75	1	A	D - Domestic I - Import
Import Coment	C1	X	X		77-81	5 (4,1)	R	000.0-100.0
Input Record Type	C2	R	R	R	1-2	2	A	C2
Manufacturer Code	C2	R	R	R	4-7	4	I	Valid MANUFACTURER CODE
Model Year	C2	R	R	R	9-12	4	I	1970-2100
Division Code	C2	R	R	R	14-15	2	I	Valid DIVISION CODE Note: Must be associated with a valid MANUFACTURER CODE.
Car Line Code	C2	R	R	R	17-19	3	I	Valid CAR LINE CODE *Note:* For *Add*, the CAR LINE CODE entered must not exist in the IOV CFEIS data base unless this CAR LINE CODE is carried over from a previous year.
Avg Passenger Vol	C2	X	X		21-27	7 (6,3)	R	000.000-999.999 *Note:* Required if vehicle is a passenger car and not a 2-seater.
Avg Luggage Vol	C2	X	X		29-34	6 (5,3)	R	00.000-99.999 *Note:* Required if vehicle is a passenger car and not a 2-seater.
2-DR Passenger Vol	C2	X	X		36-38	3	I	040-200 *Note:* Must be entered if 2-DR LUGGAGE VOL is entered.
2-DR Luggage Vol	C2	X	X		40-41	2	I	00-60 *Note:* Must be entered if 2-DR PASSENGER VOL is entered.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Car Line
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Modify	Transaction Type: Delete	Position	Length	Data Type	Valid Range/Entry Criteria
4-DR Passenger Vol	C2	X	X		43-45	3	I	040-200 *Note*: Must be entered if 4-DR LUGGAGE VOL is entered.
4-Dr Luggage Vol	C2	X	X		47-48	2	I	00-60 *Note*: Must be entered if 4-DR PASSENGER VOL is entered.
HB Passenger Vol	C2	X	X		50-52	3	I	040-200 *Note*: Must be entered if HATCHBACK LUGGAGE VOL is entered.
HB Luggage Vol	C2	X	X		54-55	2	I	04-60 *Note*: Must be entered if HATCHBACK PASSENGER VOL is entered.
Input Record Type	CS	R	R	R	1-2	2	A	CS
State Restriction Process Code	CS	X	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Delete*: 'D'
State Restriction Code	CS	X	X	X	5-6	2	A	Valid two-letter U.S. Postal Service State or Territory abbreviation.
EOT Input Record Type Code	ZZ	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

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Engine System Information (ESI)
Input Data Record Layout

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Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	E1	R	R	R	R	R	R	R	1-2	2	A	E1
Process Code	E1	R	R	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D' For *Report*: 'P' For *Cancel*: 'F' For *Reactivate*: 'G'
Engine Family Name	E1	R	R	R	R	R	R	R	5-16	12	A	Valid ENGINE FAMILY NAME
Engine System Number	E1	R	R	R	R	R	R	R	18-19	2	I	01-99
Special Compliance Indicator Code	E1	X	X	X					21-21	1	A	Y - Yes N - No
Alternate Displacement 1	E1	X	X	X					23-30	8 (7,3)	R	0000.000-8193.500 or *blank*
Alternate Displacement 2	E1	X	X	X					32-39	8 (7,3)	R	0000.000-8193.500 or *blank*
Alternate Displacement 3	E1	X	X	X					41-48	8 (7,3)	R	0000.000-8193.500 or *blank*
Combustion Cycle	E1	X							50-50	1	A	G - Otto Cycle Piston D - Diesel Cycle R - Otto Cycle Rotary 2 - Two Stroke Cycle T - Turbine H - Hybrid E - Electric A - Other *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Ignition Type	E1	X							52-52	1	A	S - Spark C - Compression *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
Fuel System	E1	X							54-55	2	I	0 - Multiple Carburetors 1 - 1 BBL 2 - 2 BBL 3 - 3 BBL 4 - 4 BBL 5 - TBI 6 - Mechanical MPI 7 - Elec. MPI - Simultaneous 8 - Elec. MPI - Sequential 9 - Central Port Injection 10 - Elec. CPI - Simultaneous 11 - Elec. CPI - Sequential 98 - None (Electric) 99 - Other (Contact EPA Prior to Use)\ *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
Valves per Cylinder	E1	X							57-58	2	I	2 - Two Valves / Cylinder 3 - Three or more Valves / Cylinder *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
Turbocharger Supercharger	E1	X							60-60	1	A	T - Turbocharger S - Supercharger N - None *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Catalyst	E1	X							62-63	2	I	1 - Oxygen Catalyst Only 2 - Reduction Catalyst 3 - 3-Way Catalyst 4 - 4-Way + Oxygen Catalyst 5 - 3-Way + Oxygen Catalyst (Light-Off / Close Coupled) 6 - Heated Catalyst 7 - Heated Catalyst (Light-Off / Close Coupled) 8 - No Catalyst 99 - Other (Contact EPA Prior to Use) *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
Trap	E1	X							65-66	2	I	1 - Trap - Active Regeneration 2 - Trap - Continuous Regeneration 3 - Trap - Continuous Regen + Fuel Additive 99 - Other (Contact EPA prior to use) *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
California OBD	E1	X							68-68	1	A	N - No OBD 1 - CARB OBD I 2 - CARD OBD II D - OBD with Deficiencies *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
Federal OBD	E1	X							70-70	1	A	Y - OBD N - No OBD D - Yes with Deficiencies *Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.
Projected Job 1 Date	E1	X	X	X					72-79	8	D	Valid calendar date. *Note:* Business rule error if the value after update is blank or null.
Trip Point	E1	X	X	X					81-86	6	I	000000-999999 or *blank*

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Production Code	E1	X							88-88	1	I	0 - 5 *Note:* Indicates the number of years earlier than the certification model year.
Preconversion Code	E1	X							90-90	1	I	0 - 5 *Note:* Indicates the number of years earlier than the certification model year.
Input Record Type	ED	R		R	R				1-2	2	A	ED
Field Process Code	ED	X		R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D'

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Diagnostic Code	ED	R		R	R				5-6	2	A	01 - Coolant Temperature 02 - Oil Temperature 03 - Engine Radiant Temperature 04 - Choke Housing Temperature 05 - Exhaust Manifold Temperature 06 - Catalyst Temperature 07 - Passenger Compartment Temperature 08 - Ambient Temperature 09 - Canister Inlet Temperature 10 - Catalyst(s) 11 - Heated Catalyst(s) 12 - Warmup Catalyst Bypass Valve 13 - Secondary Air 15 - Oil Pressure 16 - Exhaust Back Pressure 17 - Atmospheric Pressure 18 - Air Pump Pressure 19 - Fuel Tank Pressure 21 - Spark Timing 22 - Cam Position Sensor 23 - Deep / Wide-Open Throttle 24 - Idle Control Valve 25 - Idle RPM 26 - Vehicle Speed Sensor 27 - RPM (engine, distrib, etc) 28 - Change in Engine RPM 29 - Automatic Idle Speed Motor Output 31 - Air Mass Meter 32 - Heated Fuel Preparation Systems 33 - Injection Valves 34 - Intake Air Temperature 35 - Manifold Vacuum / Pressure 36 - Change in Vacuum 37 - Venturi Vacuum 38 - Crank Angle 39 - Full Load Throttle Valve Switch 40 - Idle Throttle Valve Switch

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												41 - Throttle Position Sensor 42 - Transmission Gear Position 43 - Lockup Mode 44 - Valve Train Action / Event 45 - Accessory Operating Condition 46 - Electronic only Transmission Control Output 47 - Transmission Electronics (sensors, modules, solenoids) 48 - Map Sensor 49 - EGR System 50 - Time 51 - Time in Mode 52 - Battery Voltage 53 - Electronic Control Unit 54 - Fuel Composition Sensor 55 - O^2 Content of Exhaust 56 - Turbo Wastegate Flow 57 - Heated Oxygen Sensor(s) 58 - Oxygen Sensor(s) Control Range Limit 59 - Oxygen Sensor(s) Heating 60 - Air Injection into Fuel / Induction System 61 - Air Flow 62 - EGR Valve Pintle Position 63 - EGR Flow 64 - Crank Blowby Flow 65 - Duration and/or Amount of Fuel Injection 66 - Air Injection Dump Valve Position 67 - Air Injection Rate of Flow 68 - Air Temperature into Fuel System 69 - Air / Fuel Ratio 70 - Evaporative System

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												71 - Vapor Transmission Rate 72 - Canister Purge Rate 73 - Knock Sensor 74 - Crankshaft Position Sensor 75 - Inlet / Exhaust Valve Deactivation 76 - Purge Valve 77 - Fuel System 78 - Fuel Pump 81 - Air Conditioning Fluid Leakage 91 - Other 92 - Other 93 - Other 94 - Other 95 - Other 96 - Other 97 - Other 98 - Other 99 - Other
Diagnostic Display	ED	X		X					8-8	1	I	0 - Fault Code Not Stored but Light Activated 1 - Fault Code Stored, Light Not On 2 - Fault Code Stored, Light On 9 - Other Display
Input Record Type	EE	R		R	R				1-2	2	A	EE
EERC/EVERC Process Code	EE	X		R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D'

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
EERC/EVERC Code	EE	R		R	R				5-6	2	I	01 - Combustion Chamber / Non - Conventional Valve Train 02 - Engine Modification (Diesel Only) 05 - Thermal Reactor 10 - Air Pump 11 - Pulsating Air System (Pulsating Air Injection) 14 - Closed Loop (Heated O^2 Sensor) 15 - 3-Way + CL (Heated O^2 sensor + Feedback) 16 - Oxidation Catalyst 17 - Reduction Catalyst 18 - Three-way Catalyst 19 - Closed Loop (Non-Heated O^2 sensor) 20 - Three-way Catalyst plus Closed Loop (Non-heated Oxygen sensor and feedback loop) 21 - Closed-Loop Air Injection 31 - Ported EGR 32 - Back Pressure EGR 33 - Venture Vacuum Amplified EGR 34 - Direct Throttle Activated EGR 35 - Other Activated EGR 41 - Multiple Point Fuel Injection 42 - Throttle Body Fuel Injection 50 - Turbocharger 52 - Supercharger 60 - Detonation Sensor 61 - Electronic Controls - Analog 62 - Electronic Controls - Digital 99 - Other
Input Record Type	EC	R	R	R					1-2	2	A	EC
Comment	EC	X	X	X					3-80	78	A	Text *Note*: Comment text is appended to the end of any existing comment text for Engine Family System.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	E2	R	R	R	R	R	R	R	1-2	2	A	E2
Process Code	E2	X	R	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D' For *Report*: 'P' For *Cancel*: 'F' For *Reactivate*: 'G'
Engine Family Name	E2	R	R	R	R	R	R	R	5-16	12	A	Valid ENGINE FAMILY NAME
Engine System Number	E2	R	R	R	R	R	R	R	18-19	2	I	01-99
Engine Family Subsystem Number	E2	R	R	R	R	R	R	R	21-21	1	I	1-9
Model Year	E2	X	X	X					23-26	4	I	1970-2100 *Note:* Defaults to derived Engine Family Model Year
Sales Area Code	E2	R	R	R					28-29	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle Tier 1
Projected Sales	E2	X	X	X					31-37	7	I	0000000 - 9999999 or *blank* *Note:* Business rule error if value after update is blank/null and if averaging has been specified for one or more emissions.
Actual Production	E2	X	X	X					39-45	7	I	0000000 - 9999999 or *blank*
DF Type	E2	X	X	X					47-47	1	A	ESI: 1-9, X, W *Note:* Business rule error if the value after update is blank or null.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
GVW Category	E2	R	X	R					49-54	6	A	FLDV - Light Duty Vehicle FLLDT - Light Light Duty Truck FLDT - Light Duty Truck FHLDT - Heavy Light Duty Truck FHDV - Heavy Duty Vehicle FMC - Motorcycles FUE - Utility Engines and Lawn/Garden CLDV - California Light Duty Vehicle CLDT - California Light Duty Truck CMDV - California Medium Duty Vehicle CHDV - California Heavy Duty Vehicle FVT - Vehicle or Truck FLDVT - Light Duty Vehicle or Truck FHLDTA - Heavy Light Duty Truck A FHLDTB - Heavy Light Duty Truck B FHDV1 - Heavy Duty Vehicle 1 FHDV2 - Heavy Duty Vehicle 2 CVT - California Vehicle or Truck
Vehicle Class	E2	R	X	R					56-57	2	A	Standard Engine Family Vehicle Class
Input Record Type	ES	R	R	R	R				1-2	2	A	ES
Process Code	ES	R	R	R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D'

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel Type	ES	R	R	R	R				5-7	3	A	G - Gasoline D - Diesel M - Methanol E - Ethanol C - Compressed Natural Gas (1994-1997) L - Liquid Petroleum Gas (1994-1997) CNG - Compressed Natural Gas (1998 & later) LNG - Liquefied Natural Gas LPG - Liquid Petroleum Gas (1998 & later) N - Not Applicable
Exhaust Emission Standard Code	ES	X	X	X	X				9-10	2	A	Text (01-32 and AA through ZZ) Standard Engine Family Standard
Input Record Type	EG	R	R	R	R				1-2	2	A	EG
Process Code	EG	R	R	R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D'
Useful Life	EG	R	R	R	R				5-7	3	A	000-999, N/A
Cert / In Use Code	EG	X	R	R	R				9-9	1	A	C - Certification I - In Use *Note:* Value C is assigned as a default if input is blank.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Tier	EG	R	R	R	R				11-14	4	A	T0 - Tier 0 T1 - Tier 1 T2 - Tier 2 ILEV - Inherently Low Emission Vehicle TLEV - California only - Transitional Low Emission Vehicle LEV - Low Emission Vehicle ULEV - Ultra Low Emission Vehicle ZEV - Zero Emission Vehicle N/A - Not Applicable T1I - Tier 1 Intermediate

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Emission Name	EG	R	R	R	R				16-31	16	A	HC-TOTAL - Total hydrocarbon TOTAL HC THC HC CO - Carbon monoxide CO2 - Carbon dioxide NOX - Oxides of nitrogen PM - Particulate emissions SMOKE - Smoke HC-NM - Non-methane hydrocarbon emissions NMHC HC-IDLE - Idle HC IDLEHC IDLE HC CO-IDLE - Idle CO IDLECO IDLE CO CO-COLD - Cold CO COLDCO COLD CO HC-STFI - Short test first idle HC CO-STFI - Short test first idle CO HC-ST2500 - Short test 2500 RPM HC CO-ST2500 - Short test 2500 RPM CO HC-STLM - Short test loaded mode HC CO-STLM - Short test loaded mode CO HC-STLI - Short test last idle HC CO-STLI - Short test last idle CO HC-BAG - Bag-measured HC HC-HFID - Heated-FID HC OMHCE - Organic material hydrocarbon equivalent OMNMHCE - Organic material non-methane hydrocarbon equivalent NMOG - Non-methane organic gases (California) HC-FE - Fuel economy hydrocarbon FEHC

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												HC-TOTAL-EV - Total evaporative hydrocarbon HC-TEV emissions loss HC-NM-TOTAL-EV - Total evaporative nonmethane NMHC-TEV hydrocarbon emissions loss OMHCE-TOTAL-EV - Total evaporative organic OMHCE-TEV material hydrocarbon equivalent emissions loss OMNMHCE-TOTAL-EV -Total evaporative nonmethane methane organic material hydrocarbon equivalent emissions loss HC-DIURN-EV - Diurnal evaporative hydrocarbon HC-DEV emissions loss HC-NM-DIURN-EV - Diurnal evaporative NMHC-DEV nonmethane hydrocarbon emissions loss OMHCE-DIURN-EV - Diurnal evaporative organic OMHCE-DEV material hydrocarbon equivalent emissions loss OMNMHCE-DIURN-EV - Diurnal evaporative OMNMHCE-DEV nonmethane organic material hydrocarbon equivalent emissions loss HC-HS-EV - Hot-soak evaporative hydro- HC-HSEV carbon emissions loss HC-NM-HS-EV - Hot-soak evaporative non- NMHC-HSEV methane hydrocarbon emissions loss OMHCE-HS-EV - Hot-soak evaporative organic OMHCE-HSEV material hydrocarbon OMNMHCE-HS-EV equivalent emissions loss

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												NOX-HWY - Highway Nox (California) HWY-NOX HWY NOX HCHO - Formaldehyde H3C2HO - Acetaldehyde HCHO-COLD - Cold test formaldehyde HC-TOTAL-COLD - Cold test total hydrocarbon NOX-COLD - Cold test oxides of nitrogen CO2-COLD - Cold test carbon dioxide METHANE - Methane CH4 ETHANE - Ethane C2H6 PROPANE - Propane C3H8 BUTANE - Butane C4H10 METHANOL - Methanol CH3OH ETHANOL - Ethanol C2H5OH METHANOL-COLD - Cold test methanol BENZENE - Benzene C6H6 H2 - Hydrogen O2 - Oxygen O3 - Ozone O3
Emission Standard	EG	X	X	X					33-40	8 (7,4)	R	000.0000 - 999.9999 *Note:* The system shall support the entry of emission standards by the user and may additionally provide default values if EPA has applicable standards. Business rule error if the value after update is blank or null.
Phase In Percentage	EG	X	X	X					42-44	3	I	000-100, *blank* Assign value 0 as a default if the value after update is blank or null.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Multiplicative DF	EG	X	X	X					46-50	5 (4,3)	R	0.000 - 9.999 *Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 1 when the value entered is less than 1.
Additive DF	EG	X	X	X					52-60	9 (7,6)	R	-9.999999 - 9.999999 *Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 0 when the value entered is less than 0.
Average Flag	EG	X	X	X					62-62	1	A	Y, N, *blank* *Note:* Assign value N as a default if the value after update is blank or null.
Banking and Trading Indicator	EG	X	X	X					64-64	1	A	B, T, N, *blank* *Note:* Assign value N as a default if the value after update is blank or null.
Non-Compliance Penalty Flag	EG	X	X	X					66-66	1	A	Y, N, *blank* *Note:* Assign value N as a default if the value after update is blank or null.
Waiver Flag	EG	X	X	X					68-68	1	A	Y, N, *blank* *Note:* Assign value N as a default if the value after update is blank or null.
Input Record Type	ET	R	R	R					1-2	2	A	ET
Comment	ET	X	X	X					3-80	78	A	Text *Note:* Comment text is appended to the end of any existing comment text for Engine Family Subsystem.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Engine System Information (ESI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
EOT Input Record Type Code	ZZ	R	R	R	R	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

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Evaporative System Information (EvSI)
Input Data Record Layout

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Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	P1	R	R	R	R	R	R	R	1-2	2	A	P1
Process Code	P1	R	R	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D' For *Report*: 'P' For *Cancel*: 'F' For *Reactivate*: 'G'
Evaporative Family Name	P1	R	R	R	R	R	R	R	5-16	12	A	Valid EVAPORATIVE FAMILY NAME
Evaporative System Number	P1	R	R	R	R	R	R	R	18-19	2	I	01-99
Fuel Induction Indicator Code	P1	X	X	X					21-21	1	I	1 - Carbureted 2 - Fuel Injection *Note:* Default is '2'.
Vapor Storage System	P1	X							23-23	1	A	1 - Canister 2 - Crankcase 3 - Air Cleaner 4 - Canister and Crankcase 5 - Crankcase and Air Cleaner 6 - Canister and Air Cleaner 7 - Canister, Crankcase and Air Cleaner *Note:* Field required on an Add Transaction if no Evaporative Family Systems exist for the Evaporative Family.
Input Record Type	PF	R		R	R				1-2	2	A	PF

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Field Process Code	PF	R		R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D'
Canister Configuration Number	PF	R		R	R				5-6	2	I	01-27
Canister Bottom	PF	R		X					8-9	2	A	N - Closed Y - Open N/A - Not Applicable
Canister Housing	PF	R		X					11-12	2	A	M - Metal P - Plastic N/A - Not Applicable
Purge	PF	R		X					14-15	2	A	N - Not Controlled Y - Controlled N/A - Not Applicable
Input Record Type	PM	R		R	R				1-2	2	A	PM
Field Process Code	PM	X		R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D'
Fuel Type	PM	R		R	R				5-7	3	A	G - Gasoline D - Diesel M - Methanol E - Ethanol C - Compressed Natural Gas (1994-1997) L - Liquid Petroleum Gas (1994-1997) CNG - Compressed Natural Gas (1998 & later) LNG - Liquefied Natural Gas LPG - Liquid Petroleum Gas (1998 & later) N - Not Applicable

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel Tank Material	PM	X		X					9-80	72	A	Text *Note:* Modify will append to end of existing fuel tank material text. Multiple input records are allowed.
Input Record Type	PD	R		R	R				1-2	2	A	PD
Field Process Code	PD	X		R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D'

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Diagnostic Code	PD	R		R	R				5-6	2	I	01 - Coolant Temperature 02 - Oil Temperature 03 - Engine Radiant Temperature 04 - Choke Housing Temperature 05 - Exhaust Manifold Temperature 06 - Catalyst Temperature 07 - Passenger Compartment Temperature 08 - Ambient Temperature 09 - Canister Inlet Temperature 10 - Catalyst(s) 11 - Heated Catalyst(s) 12 - Warmup Catalyst Bypass Valve 13 - Secondary Air 15 - Oil Pressure 16 - Exhaust Back Pressure 17 - Atmospheric Pressure 18 - Air Pump Pressure 19 - Fuel Tank Pressure 21 - Spark Timing 22 - Cam Position Sensor 23 - Deep / Wide-Open Throttle 24 - Idle Control Valve 25 - Idle RPM 26 - Vehicle Speed Sensor 27 - RPM (engine, distrib, etc) 28 - Change in Engine RPM 29 - Automatic Idle Speed Motor Output 31 - Air Mass Meter 32 - Heated Fuel Preparation Systems 33 - Injection Valves 34 - Intake Air Temperature 35 - Manifold Vacuum / Pressure 36 - Change in Vacuum 37 - Venturi Vacuum 38 - Crank Angle 39 - Full Load Throttle Valve Switch 40 - Idle Throttle Valve Switch

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												41 - Throttle Position Sensor 42 - Transmission Gear Position 43 - Lockup Mode 44 - Valve Train Action / Event 45 - Accessory Operating Condition 46 - Electronic only Transmission Control Output 47 - Transmission Electronics (sensors, modules, solenoids) 48 - Map Sensor 49 - EGR System 50 - Time 51 - Time in Mode 52 - Battery Voltage 53 - Electronic Control Unit 54 - Fuel Composition Sensor 55 - O^2 Content of Exhaust 56 - Turbo Wastegate Flow 57 - Heated Oxygen Sensor(s) 58 - Oxygen Sensor(s) Control Range Limit 59 - Oxygen Sensor(s) Heating 60 - Air Injection into Fuel / Induction System 61 - Air Flow 62 - EGR Valve Pintle Position 63 - EGR Flow 64 - Crank Blowby Flow 65 - Duration and/or Amount of Fuel Injection 66 - Air Injection Dump Valve Position 67 - Air Injection Rate of Flow 68 - Air Temperature into Fuel System 69 - Air / Fuel Ratio 70 - Evaporative System

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												71 - Vapor Transmission Rate 72 - Canister Purge Rate 73 - Knock Sensor 74 - Crankshaft Position Sensor 75 - Inlet / Exhaust Valve Deactivation 76 - Purge Valve 77 - Fuel System 78 - Fuel Pump 81 - Air Conditioning Fluid Leakage 92 - Other 93 - Other 94 - Other 95 - Other 91 - Other 96 - Other 97 - Other 98 - Other 99 - Other
Diagnostic Display	PD	X		X					8-8	1	I	0 - Fault Code Not Stored but Light Activated 1 - Fault Code Stored, Light Not On 2 - Fault Code Stored, Light On 9 - Other Display
Input Record Type	PE	R		R	R				1-2	2	A	PE
EERC/EVERC Process Code	PE	X		R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D'

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
EERC/EVERC Code	PE	R		R	R				5-6	2	I	01 - Combustion Chamber / Non - Conventional Valve Train 02 - Engine Modification (Diesel Only) 05 - Thermal Reactor 10 - Air Pump 11 - Pulsating Air System (Pulsating Air Injection) 14 - Closed Loop (Heated O^2 Sensor) 15 - 3-Way + CL (Heated O^2 sensor + Feedback) 16 - Oxidation Catalyst 17 - Reduction Catalyst 18 - Three-way Catalyst 19 - Closed Loop (Non-Heated O^2 sensor) 20 - Three-way Catalyst plus Closed Loop (Non-heated Oxygen sensor and feedback loop) 21 - Closed-Loop Air Injection 31 - Ported EGR 32 - Back Pressure EGR 33 - Venture Vacuum Amplified EGR 34 - Direct Throttle Activated EGR 35 - Other Activated EGR 41 - Multiple Point Fuel Injection 42 - Throttle Body Fuel Injection 50 - Turbocharger 52 - Supercharger 60 - Detonation Sensor 61 - Electronic Controls - Analog 62 - Electronic Controls - Digital 99 - Other
Input Record Type	PC	R	R	R					1-2	2	A	PC
Comment	PC	X	X	X					3-80	78	A	Text *Note*: Comment text is appended to the end of any existing comment text for Evaporative Family System.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	P2	R	R	R	R	R	R	R	1-2	2	A	P2
Process Code	P2	R	R	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D' For *Report*: 'P' For *Cancel*: 'F' For *Reactivate*: 'G'
Evaporative Family Name	P2	R	R	R	R	R	R	R	5-16	12	A	Valid EVAPORATIVE FAMILY NAME
Evaporative System Number	P2	R	R	R	R	R	R	R	18-19	2	I	01-99
Evaporative Subsystem Number	P2	R	R	R	X	R	R	R	21-21	1	I	1-9
Model Year	P2	X	X	X					23-26	4	I	1970-2100 *Note:* Defaults Model Year is derived from Evaporative Family Name.
Sales Area Code	P2	R	R	R					28-29	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle / Tier 1
DF Type	P2	X	X	X					31-31	1	A	EvSI: 1-9, X, W, V *Note:* Business rule error if the value after update is blank or null.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphammeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
GVW Category	P2	R	X	R					33-38	6	A	FLDV - Light Duty Vehicle FLLDT - Light Light Duty Truck FLDT - Light Duty Truck FHLDT - Heavy Light Duty Truck FHDV - Heavy Duty Vehicle FMC - Motorcycles FUE - Utility Engines and Lawn/Garden CLDV - California Light Duty Vehicle CLDT - California Light Duty Truck CMDV - California Medium Duty Vehicle CHDV - California Heavy Duty Vehicle FVT - Vehicle or Truck FLDVT - Light Duty Vehicle or Truck FHLDTA - Heavy Light Duty Truck A FHLDTB - Heavy Light Duty Truck B FHDV1 - Heavy Duty Vehicle 1 FHDV2 - Heavy Duty Vehicle 2 CVT - California Vehicle or Truck
Input Record Type	PS	R	R	R	R				1-2	2	A	PS
Process Code	PS	R	R	R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D'
Fuel Type	PS	R	R	R	R				5-7	3	A	G - Gasoline D - Diesel M - Methanol E - Ethanol C - Compressed Natural Gas (1994-1997) L - Liquid Petroleum Gas (1994-1997) CNG - Compressed Natural Gas (1998 & later) LNG - Liquefied Natural Gas LPG - Liquid Petroleum Gas (1998 & later) N - Not Applicable

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Evaporative Standard	PS	X	X	X	X				9-12	4	A	EXIS - Existing (2 Hour) ENHA - Enhanced (2 Day + 3 Day)
Input Record Type	PG	R	R	R	R				1-2	2	A	PG
Process Code	PG	R	R	R	R				3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D'
Useful Life	PG	R	R	R	R				5-7	3	A	000-999, N/A

Transaction Type: R = Required X = Optional ' ' = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Emission Name	PG	R	R	R	R				9-24	16	A	HC-TOTAL - Total hydrocarbon TOTAL HC THC HC CO - Carbon monoxide CO2 - Carbon dioxide NOX - Oxides of nitrogen PM - Particulate emissions SMOKE - Smoke HC-NM - Non-methane hydrocarbon NMHC emissions HC-IDLE - Idle HC IDLEHC IDLE HC CO-IDLE - Idle CO IDLECO IDLE CO CO-COLD - Cold CO COLDCO COLD CO HC-STFI - Short test first idle HC CO-STFI - Short test first idle CO HC-ST2500 - Short test 2500 RPM HC CO-ST2500 - Short test 2500 RPM CO HC-STLM - Short test loaded mode HC CO-STLM - Short test loaded mode CO HC-STLI - Short test last idle HC CO-STLI - Short test last idle CO HC-BAG - Bag-measured HC HC-HFID - Heated-FID HC OMHCE - Organic material hydrocarbon equivalent OMNMHCE - Organic material non-methane hydro- carbon equivalent NMOG - Non-methane organic gases (California) HC-FE - Fuel economy hydrocarbon FEHC

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												HC-TOTAL-EV - Total evaporative hydrocarbon HC-TEV emissions loss HC-NM-TOTAL-EV - Total evaporative nonmethane NMHC-TEV hydrocarbon emissions loss OMHCE-TOTAL-EV - Total evaporative organic OMHCE-TEV material hydrocarbon equivalent emissions loss OMNMHCE-TOTAL-EV -Total evaporative nonmethane methane organic material hydrocarbon equivalent emissions loss HC-DIURN-EV - Diurnal evaporative hydrocarbon HC-DEV emissions loss HC-NM-DIURN-EV - Diurnal evaporative NMHC-DEV nonmethane hydrocarbon emissions loss OMHCE-DIURN-EV - Diurnal evaporative organic OMHCE-DEV material hydrocarbon equivalent emissions loss OMNMHCE-DIURN-EV - Diurnal evaporative OMNMHCE-DEV nonmethane organic material hydrocarbon equivalent emissions loss HC-HS-EV - Hot-soak evaporative hydro- HC-HSEV carbon emissions loss HC-NM-HS-EV - Hot-soak evaporative non- NMHC-HSEV methane hydrocarbon emissions loss OMHCE-HS-EV - Hot-soak evaporative organic OMHCE-HSEV material hydrocarbon OMNMHCE-HS-EV equivalent emissions loss

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
												NOX-HWY - Highway Nox (California) HWY-NOX HWY NOX HCHO - Formaldehyde H3C2HO - Acetaldehyde HCHO-COLD - Cold test formaldehyde HC-TOTAL-COLD - Cold test total hydrocarbon NOX-COLD - Cold test oxides of nitrogen CO2-COLD - Cold test carbon dioxide METHANE - Methane CH4 ETHANE - Ethane C2H6 PROPANE - Propane C3H8 BUTANE - Butane C4H10 METHANOL - Methanol CH3OH ETHANOL - Ethanol C2H5OH METHANOL-COLD - Cold test methanel BENZENE - Benzene C6H6 H2 - Hydrogen O2 - Oxygen O3 - Ozone O3
Emission Standard	PG	X	X	X					26-33	8 (7,4)	R	000.0000 - 999.9999 *Note:* The system shall support the entry of emission standards by the user and may additionally provide default values if EPA has applicable standards. Business rule error if the value after update is blank or null.
Phase In Percentage	PG	X	X	X					35-37	3	I	000-100, *blank* Assign value 0 as a default if the value after update is blank or null.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Evaporative System Information (EvSI)
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Cancel	Reactivate	Position	Length	Data Type	Valid Range/Entry Criteria
Multiplicative DF	PG	X	X	X					39-43	5 (4,3)	R	0.000-9.999 *Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 1 when the value entered is less than 1.
Additive DF	PG	X	X	X					45-53	9 (7,6)	R	-9.999999 - 9.999999 *Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 0 when the value entered is less than 0.
Input Record Type	PT	R	R	R					1-2	2	A	PT
Comment	PT	X	X	X					3-80	78	A	Text *Note:* Comment text is appended to the end of any existing comment text for Evaporative Family Subsystem.
EOT Input Record Type Code	ZZ	R	R	R	R	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

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General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	G1	R	R	R	R	1-2	2	A	G1
Process Code	G1	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D' For *Reprocess*: 'S'
Manufacturer Code	G1	R	R	R	R	4-7	4	I	Valid MANUFACTURER CODE *Note:* Concatenation with INDEX NUMBER must represent a unique BASIC ENGINE INDEX within a model year in the IOV CFEIS data base.
Index Number	G1	R	R	R	R	9-11	3	I	001-999
Model Year	G1	R	R	R	R	13-16	4	I	1970-2100
Cubic Inch Displacement	G1	R	R			18-20	3	I	000-999
Number of Cylinders	G1	R	R			22-23	2	I	00-99
Combustion Cycle	G1	R	R			25-25	1	A	G - Otto Cycle (SI) Piston R - Otto Cycle (SI) Rotary D - Diesel Cycle (CI) 2 - Two Stroke Cycle T - Turbine H - Hybrid Electric E - Electric A - Other
Fuel Injection	G1	R	R			27-27	1	A	N - No S - Single M - Multi-point (Default for diesels)
Number of Venturi	G1	R	R			29-30	2	I	00-99 *Note:* Default is '00'.

Transaction Type: R = Required X = Optional ' ' = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Catalyst	G1	R	R			32-32	1	A	Y - Yes N - No *Note:* Default is 'Y'.
Feedback Fuel System	G1	R	R			34-34	1	A	Y - Yes N - No *Note:* Default is 'N'.
Variable Displacement	G1	R	R			36-36	1	A	Y - Yes N - No *Note:* Default is 'N'.
Turbocharged	G1	R	R			38-38	1	A	Y - Yes N - No C - Yes, with charge air cooling *Note:* Default is 'N'.
Supercharged	G1	R	R			40-40	1	A	Y - Yes N - No C - Yes, with charge air cooling *Note:* Default is 'N'.
Police Vehicle	G1	X	X			42-42	1	A	Y - Yes N - No *Note:* Default is 'N'.
Engine Block Descriptors	G1	R	R			44-53	10	A	Text *Note:* Default is 'Blank'.
FI Description	G1	X	X			55-55	1	A	Y - Yes N - No
Unique Label	G1	X	X			57-57	1	A	Y - Yes N - No
Recalculation	G1	X	X			59-59	1	A	Y - Yes N - No

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Relabel Option	G1		X			61-61	1	A	Y - Yes N - No
Release Date	G1	R	R			63-70	8	D	Valid calendar date. *Note:* Default is two weeks from submission date.
Input Record Type	G2	R	R			1-2	2	A	G2
Transmission Class	G2	R	R			4-5	2	I	01-99 Linkage field to 'GM' and 'GF' input records.
Transmission Type	G2	R	R			7-8	2	A	C4 - Creeper/Manual 4-speed M3 - Manual 3-speed B3 - Both C4 & M3 C5 - Creeper/Manual 5-speed M4 - No Creeper/Manual 4-speed B4 - Both C5 & M4 M5 - Manual 5-speed M6 - Manual 6-speed A3 - No Lockup/Automatic/3-speed L3 - Lock-up/Automatic/3-speed A4 - No Lockup/Automatic/4-Speed L4 - Lock-up/Automatic/4-speed S2 - Semi-Automatic 2-speed S3 - Semi-Automatic 3-speed S4 - Semi-Automatic 4-speed S5 - Semi-Automatic 5-speed AV - Automatic variable Gear Ratios
Drive System	G2	R	R			10-10	1	A	4 - 4-wheel Drive F - 2-wheel Drive, front R - 2-wheel Drive, rear

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Transmission Overdrive	G2	R	R			12-12	1	I	1 - No gear ratio < 1 2 - Top gear ratio < 1 3 - Electrically operated O/D 4 - Computer controlled automatic electronic overdrive 5 - Computer controlled automatic electronic overdrive with lock-out switch
Shift Indicator Light	G2	R	R			14-14	1	A	Y - Yes N - No *Note:* Default is 'N'.
Engine Management System	G2	R	R			16-16	1	A	Y - Yes N - No L - Yes, but with lock-out features *Note:* Default is 'N'.
Number of Transmission Modes	G2	R	R			18-19	2	A	V - Continuously variable, user selectable C - Computer controlled multiple gear ratios 1-9 - Number of discrete user selectable transmission modes N - Not Applicable *Note:* Default is 'N'.
Variable Lockup Point	G2	R	R			21-21	1	A	*N, blank* - No variable lock-up point V - Continuously variable C - Computer controlled lock-up 1-9 - Number of discrete lock-up rpm ranges
Declutching/Freewheeling	G2	R	R			23-23	1	A	Y - Yes N - No L - Yes, but with lock-out features *Note:* Default is 'N'.
Input Record Type	GM	R	R			1-2	2	A	GM

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Manufacturer Code	GM	R	R			4-7	4	I	Valid MANUFACTURER CODE
Division Code	GM	R	R			9-10	2	I	Valid DIVISION CODE *Note*: Must be associated with a MANUFACTURER CODE.
Car Line Code	GM	R	R			12-14	3	I	Valid CAR LINE CODE
Transmission Class	GM	R	R			16-17	2	I	01-99 Linkage field to 'G2' and 'GF' input records.
Guzzler Exempt	GM	X	X			19-19	1	A	*blank* - Not exempt N - Not exempt 1 - Unloaded GVWR > 6000 lbs 2 - Emergency Vehicle 3 - IRS Alternative Rate Schedule 4 - Small volume manufacturer who lengthens an existing vehicle. *Note:* Default is 'N'.
Optional Displacement	GM	X	X			21-24	4	I	0000-9999
Optional Displacement Code	GM	X	X			26-26	1	A	C - Cubic centimeters L - Liter
Unrounded Unadjusted City FE	GM	X	X			28-35	8 (7,4)	R	000.0000-999.9999
Unrounded Unadjusted Hwy FE	GM	X	X			37-44	8 (7,4)	R	000.0000-999.9999
Unrounded Unadjusted Comb FE	GM	X	X			46-53	8 (7,4)	R	000.0000-999.9999
Rounded Adjusted City FE	GM	X	X			55-56	2	I	00-99
Rounded Adjusted Hwy FE	GM	X	X			58-59	2	I	00-99

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Rounded Adjusted Comb FE	GM	X	X			61-62	2	I	00-99
Annual Fuel Cost	GM	X	X			64-67	4	I	0000-9999 *Note*: Entered value will be overwritten by a derived fuel cost based on the rounded adjusted combined fuel economy and 15,000 miles of driving per year.
Approval Date	GM	X	X			69-76	8	D	Valid calendar date.
New Label Indicator	GM	X	X			78-78	1	A	Y - Yes N - No
Fuel Usage	GM	X	X			80-80	1	A	R - Regular Unleaded P - Premium Unleaded D - Diesel C - Compressed Natural Gas
Sales Data Suppression Code	GM	X	X			82-82	1	I	2 - Code is for use by the Cert Team 5 - Police vehicle 9 - Model type was used in another index but required to support calculation of a new model type.
Input Record Type	GR	R	R			1-2	2	A	GR
Transmission Configuration	GR	R	R			4-5	2	I	01-99 Linkage field to 'GF' and 'GL' input records.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Gear Range Number	GR	X	X			7-7	1	A	1-9 - Indicates gear range number O - Indicates ratios entered are normal gear ratios (O/D not engaged) N - Indicates ratios entered are O/D gear ratios (O/D engaged) L - Low end, range of gear ratios H - High end, range of gear ratios *Note*: Required if Gear Range data is entered.
Gear Ratio First	GR	X	X			9-13	5 (4,3)	R	0.000-9.999
Gear Ratio Second	GR	X	X			15-19	5 (4,3)	R	0.000-9.999
Gear Ratio Third	GR	X	X			21-25	5 (4,3)	R	0.000-9.999
Gear Ratio Fourth	GR	X	X			27-31	5 (4,3)	R	0.000-9.999
Gear Ratio Fifth	GR	X	X			33-37	5 (4,3)	R	0.000-9.999
Gear Ratio Sixth	GR	X	X			39-43	5 (4,3)	R	0.000-9.999
Input Record Type	GL	R	R			1-2	2	A	GL
Transmission Configuration	GL	R	R			4-5	2	I	01-99 Linkage field to 'GR' and 'GF' input records.
Lock-up Range Number	GL	X	X			7-7	1	A	1-9 - Indicates lockup range number L - Low end, range of RPM's H - High end, range of RPM's *Note*: Required if Lock-up RPM data is entered.
Lock-up RPM First	GL	X	X			9-12	4	I	0000-9999
Lock-up RPM Second	GL	X	X			14-17	4	I	0000-9999
Lock-up RPM Third	GL	X	X			19-22	4	I	0000-9999

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Lock-up RPM Fourth	GL	X	X			24-27	4	I	0000-9999
Lock-up RPM Fifth	GL	X	X			29-32	4	I	0000-9999
Lock-up RPM Sixth	GL	X	X			34-37	4	I	0000-9999
Input Record Type	GC	X	X			1-2	2	A	GC
Comments	GC	X	X			3-80	78	A	Text *Note*: Multiple comment input records permitted. 'Replace' deletes old comments and adds new comments, while 'Modify' adds additional input comments to previously stored comments if any.
Input Record Type	GF	R	R			1-2	2	A	GF
Manufacturer Code	GF	R	R			4-7	4	I	Valid MANUFACTURER CODE
Division Code	GF	R	R			9-10	2	I	Valid DIVISION CODE *Note*: Must be associated with a MANUFACTURER CODE.
Car Line Code	GF	R	R			12-14	3	I	Valid CAR LINE CODE
Transmission Class	GF	R	R			16-17	2	I	01-99 Linkage field to 'G2' and 'GM' input records.
DVC	GF	R	R			19-21	3	I	001-499: A portion of this configuration is represented by a test vehicle. 501-999: No portion of this configuration is represented by a test vehicle.
Transmission Configuration	GF	R	R			23-24	2	I	01-99 Linkage field to 'GR' and 'GL' input records.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Axle Ratio	GF	R	R			26-29	4 (3,2)	R	0.00-9.99
Engine Code	GF	R	R			31-44	14	A	Valid ENGINE CODE
RLC	GF	R	R			46-47	2	I	01-49: Used for subconfigurations represented by a test vehicle. 51-99: Used for subconfiguration not represented by a test vehicle.
ETW	GF	R	R			49-53	5	I	Valid Equivalent Test Weight within a specified Inertia Weight Class as defined in paragraph §86-129-80 of the 40 CFR
RLHP	GF	R	R			55-58	4 (3,1)	R	00.0-99.9
Lockup Override	GF	X	X			60-60	1	A	Y - Yes N - No *Note:* Default is 'N'.
Altitude Code	GF	R	R			62-62	1	I	1 - Low altitude only 2 - High altitude only 3 - All altitudes *Note:* Default is '3'.
Engine Family Name	GF	R	R			64-75	12	A	Valid ENGINE FAMILY NAME
Sub-Configuration Sales	GF	R	R			77-82	6	I	000000-999999
Input Record Type	GT	R	R			1-2	2	A	GT
DVC	GT	R	R			4-6	3	I	001-499: A portion of this configuration is represented by a test vehicle. 501-999: No portion of this configuration is represented by a test vehicle.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

General Label
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
RLC	GT	R	R			8-9	2	I	01-49: Used for subconfigurations represented by a test vehicle. 51-99: Used for subconfiguration not represented by a test vehicle.
Test Link Identifier	GT	X	X			11-11	1	A	A-Z, 1-9 *Note*: Logical link of repeating input test records.
Averaging Group Indicator	GT	X	X			13-13	1	A	A-Z, 1-9 *Note*: Links a group of City or Highway weighted group tests which may span multiple input records. This is only needed when spanning multiple input records for a group of city or highway tests.
City Highway Indicator	GT	X	X			15-15	1	A	C - City Test H - Highway Test
Test Group Weighting	GT	X	X			17-20	4 (3,2)	R	0.00-1.00
Test Number	GT	X	X			22-28	7	I	Valid existing test number
EOT Input Record Type	ZZ	R	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

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EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	T1	R	R	R	R	R	R	R	R	1-2	2	A	T1
Process Code	T1	R	R	R	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D' For *Report*: 'P' For *Carry Over*: 'C' For *Carry Across*: 'X' For *Reprocess*: 'S'
Manufacturer Code	T1	R	R	R	R	R	R	R	R	4-7	4	I	Valid MANUFACTURER CODE
Test Number	T1		R	R	R	R	R	R	R	9-15	7	I	0000000 - 9999999 Valid test number format. *Note:* EPA shall supply a valid EPA test number in the Add Transaction.
Model Year	T1	R	R	R	R		R	R	R	17-20	4	I	1970-2100
Vehicle Identification	T1	R	R	R	R		R	R	R	22-41	20	A	Valid VEHICLE ID
Vehicle Configuration Number	T1	R	R	R	R		R	R	R	43-44	2	I	00-99
Test Purpose	T1	R	R	R			R	R	R	46-47	2	I	01 - Emission Data 02 - Durability 08 - Manufacturers' Development 26 - Independent Commercial Importer 31 - Fuel Economy 32 - Analytical Fuel Economy 33 - Certification and/or Fuel Economy for other years (Carry Over)

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Test Procedure	T1	R	R	R						49-50	2	I	02 - CVS 75 - Later 03 - HWFE 06 - Evap. Only 10 - Idle CO 11 - Cold CO 12 - Short Test 13 - Constant Temperature Evaporative 14 - Variable Temperature Evaporative 15 - Spitback Test 16 - 1995 California Variable Temperature Evaporative 17 - 1995 California Running Loss Evaporative 21 - Federal 2-day Butane Preconditioned Exhaust 22 - Federal 2-day Butane Preconditioned Exhaust plus Hot Soak 23 - Federal 2-day Butane Preconditioned Exhaust plus Hot Soak plus 2-day Variable Temperature Shed 24 - Federal 2-day Butane Preconditioned Exhaust plus Refueling 25 - California 2-day Butane Preconditioned Exhaust 26 - California 2-day Butane Preconditioned Exhaust plus Hot Soak 27 - California 2-day Butane Preconditioned Exhaust plus Hot Soak plus 2-day Variable Temperature Shed 28 - California 2-day Butane Preconditioned Exhaust plus Refueling 31 - Federal 3-day Exhaust 32 - Federal 3-day Exhaust plus Running Loss 33 - Federal 3-day Exhaust plus Running Loss plus Hot Soak

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
													34 - Federal 3-day Exhaust plus Running Loss plus Hot Soak plus 3-day Variable Temperature Shed 35 - California 3-day Exhaust 36 - California 3-day Exhaust plus Running Loss 37 - California 3-day Exhaust plus Running Loss plus Hot Soak 38 - California 3-day Exhaust plus Running Loss plus Hot Soak plus 3-day Variable Temperature Shed 41 - Federal 2-day Heat-build Preconditioned Exhaust 42 - Federal 2-day Heat-build Preconditioned Exhaust plus Hot Soak 43 - Federal 2-day Heat-build Preconditioned Exhaust plus Hot Soak plus 2-day Variable Temperature Shed 44 - Federal 2-day Heat-build Preconditioned Exhaust plus Refueling 45 - California 2-day Heat-build Preconditioned Exhaust 46 - California 2-day Heat-build Preconditioned Exhaust plus Hot Soak 47 - California 2-day Heat-build Preconditioned Exhaust plus Hot Soak plus 2-day Variable Temperature Shed 71 - CST - Idle Test 72 - CST - Two Speed Idle Test 73 - CST - Loaded Test 74 - CST - Preconditioned Idle Test 76 - CST - Preconditioned Two Speed Idle Test 77 - CST - IM240 78 - CST - Purge Test 79 - CST - Pressure Test
High Altitude	T1	X	X	X						52-52	1	A	Y, N Default is 'N'
Test Date	T1	X	X	X						54-61	8	D	Valid calendar date.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Technical Disposition Code	T1	X	X	X						63-63	1	I	1 - Valid 2 - Void 3 - Minor Void Blank - None * - Clears existing field
Certification Disposition Code	T1	X	X	X			X	X		65-66	2	I	01 - Pass 02 - Fuel Economy Only 03 - Fail 04 - Void 05 - DF not available 06 - Evaporative results only 07 - After Shipment 08 - Zero mile test 09 - Highway NOx fail blank - No disposition * - Clear Existing field
Fuel Economy Disposition Code	T1	X	X	X			X	X		68-69	2	I	01 - Used for Fuel Economy 02 - Not used for Fuel Economy 03 - "Reasonable," but not used for fuel economy 04 - Not reviewed, not used for fuel economy 07 - Awaiting confirmatory testing blank - No disposition * - Clear Existing field
Calculate Deterioration Factors	T1	X	X	X						71-71	1	A	Y, N Default to 'N' *Note:* Applies only to durability tests.
Retest Code	T1	X	X	X						73-73	1	A	Y, N Default to 'N'
Input Record Type	T2	R	R	R						1-2	2	A	T2
Test Lab Site Code	T2	R	X	X						4-5	2	I	01-99

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Test Analysis Site	T2	X	X	X						7-10	4	A	Text *Note:* Evaporative Tests - No Entry
Dyno Site	T2	X	X	X						12-15	4	A	Text Note: Evaporative Tests - No Entry
Evaporative Enclosure Site	T2	X	X	X						17-20	4	A	Text
Odometer Reading	T2	X	X	X						22-29	8 (7,1)	R	000000.0-999999.9
Units (Odometer)	T2	X	X	X						31-31	1	A	M - Miles K - Kilometers
Reason for Confirmation	T2	X	X	X						33-34	2	I	01 - Random audit 02 - Failure at manufacturer 03 - Cert level equals standards 04 - FE >= leader 05 - FE up by 1 or more 06 - New vehicle, no data 07 - FE correlation offset 08 - Defeat device evaluation 09 - Replacement of failed vehicle 10 - Potential gas guzzler 11 - Potential I/M concerns 99 - Other reason *Note:* This data element is applicable to EPA performed tests and should only be submitted with EPA test data.
Fuel Batch Id	T2	R	R	R						36-41	6	A	Text *Note*: Not Required where VI Fuel Type is Diesel.
Fuel Calibration Number	T2	R	R	R						43-46	4	I	0001-9999 *Note*: Not Required where VI Fuel Type is Diesel.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
VI Fuel Type	T2	R	X	X						48-49	2	I	06 - Unleaded (at EPA 96 RON) 09 - Diesel (at EPA #2 Diesel) 17 - Leaded (at EPA Ind 15) 22 - Special Unleaded 94 RON 23 - Carb Phase II Gasoline (CERT) 24 - Cold CO Regular (Cert) 25 - Cold CO Premium (Cert) 30 - Methanol (Cert Other) 31 - Methanol (Cert M10) 32 - Methanol (Cert M50) 33 - Methanol (Cert M85) 34 - Methanol (Cert M100) 39 - Ethanol (Reserved for CERT - not IOV CFEIS) 40 - Hydrogen (Reserved for CERT - not IOV CFEIS) 41 - CNG (CERT) 42 - LPG (reserved for CERT) (Not IOV CFEIS)
Input Record Type	T3	R	R	R						1-2	2	A	T3
Average Code	T3	X	X	X						4-4	1	A	1-9, A-Z *Note:* Applies only to Durability Tests.
Ambient Temperature	T3	X	X	X						6-10	5 (4,1)	R	000.0-999.9 *Note:* No entry needed for Evaporative Tests
Ambient Temperature Units	T3	X	X	X						12-12	1	A	F - Fahrenheit C - Celsius Default is 'F' *Note:* No entry needed for Evaporative Tests
Barometric Pressure Value	T3	X	X	X						14-19	6 (5,2)	R	000.00-999.99 *Note:* No entry needed for Evaporative Tests

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

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EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
													FE-URND-UADJ - Unrounded unadjusted fuel Economy FE-URND-ADJ - Unrounded adjusted fuel economy FE-RND-UADJ - Rounded unadjusted fuel economy FE-RND-ADJ - Rounded adjusted fuel economy
Input Record Type	TC	R	R	R						1-2	2	A	TC
Test Comments	TC	X	X	X						3-80	78	A	Text *Note:* Multiple comment input records permitted. 'Replace' deletes old comments and adds new comments, while 'Modify' adds additional input comments to previously stored comments, if any. Up to 12 comment input records permitted.
EOT Input Record Type Code	ZZ	R	R	R	R	R	R		R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
													HSEV methane hydrocarboo emissions loss OMHCE-HS-EV - Hot-soak evaporative organic OMHCE-HSEV material hydrocarbon OMNMHCE-HS-EV equivalent emissions loss NOX-HWY - Highway Nox (California) HWY-NOX HWY NOX HCHO - Formaldehyde H3C2HO - Acetaldehyde HCHO-COLD - Cold test formaldehyde HC-TOTAL-COLD - Cold test total hydrocarbon NOX-COLD - Cold test oxides of nitrogen CO2-COLD - Cold test carbon dioxide METHANE - Methane CH4 ETHANE - Ethane C2H6 PROPANE - Propane C3H8 BUTANE - Butane C4H10 METHANOL - Methanol CH3OH ETHANOL - Ethanol C2H5OH METHANOL-COLD - Cold test methanol BENZENE - Benzene C6H6 H2 - Hydrogen O2 - Oxygen O3 - Ozone O3 MFR FE - Manufacturer-derived fuel economy EPA FE - EPA-calculated fuel economy FE - Official fuel economy F.E.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
													NMOG - Non-methane organic gases (California) HC-FE - Fuel economy hydrocarbon FEHC HC-TOTAL-EV - Total evaporative hydrocarbon HC-TEV emissions loss HC-NM-TOTAL-EV - Total evaporative NMHC-TEV nonmethane hydrocarbon emissions loss OMHCE-TOTAL-EV - Total evaporative organic OMHCE-TEV material hydrocarbon equivalent emissions loss OMNMHCE-TOTAL-EV -Total evaporative nonmethane methane organic material hydrocarbon equivalent emissions loss HC-DIURN-EV - Diurnal evaporative hydrocarbon HC-DEV emissions loss HC-NM-DIURN-EV - Diurnal evaporative NMHC-DEV nonmethane hydrocarbon emissions loss OMHCE-DIURN-EV - Diurnal evaporative organic OMHCE-DEV material hydrocarbon equivalent emissions loss OMNMHCE-DIURN-EV - Diurnal evaporative OMNMHCE-DEV nonmethane organic material hydrocarbon equivalent emissions loss HC-HS-EV - Hot-soak evaporative hydro- HC-HSEV carbon emissions loss HC-NM-HS-EV - Hot-soak evaporative non-NMHC-

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Unrounded Emission Result Name	TR	X	X	X						17-32	16	A	HC-TOTAL - Total hydrocarbon TOTAL HC THC HC CO - Carbon monoxide CO2 - Carbon dioxide NOX - Oxides of nitrogen PM - Particulate emissions SMOKE - Smoke HC-NM - Non-methane hydrocarbon NMHC emissions HC-IDLE - Idle HC IDLEHC IDLE HC CO-IDLE - Idle CO IDLECO IDLE CO CO-COLD - Cold CO COLDCO COLD CO HC-STFI - Short test first idle HC CO-STFI - Short test first idle CO HC-ST2500 - Short test 2500 RPM HC CO-ST2500 - Short test 2500 RPM CO HC-STLM - Short test loaded mode HC CO-STLM - Short test loaded mode CO HC-STLI - Short test last idle HC CO-STLI - Short test last idle CO HC-BAG - Bag-measured HC HC-HFID - Heated-FID HC OMHCE - Organic material hydrocarbon equivalent OMNMHCE - Organic material non-methane hydro-

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel Blend Carbon Weight Fraction	T4	X	X	X						75-79	5 (4,3)	R	0.835-0.886 (Gasoline) Gasoline - CWF 0.864-0.873 (Diesel) Diesel - NOT REQUIRED 0.3745-0.3745 (Methanol) Methanol - CWF 0.3745-0.880 (Methanol blend) Methanol blend - CWF 0.839-0.844 (California Phase II) California Phase II - CWF_{blend} 0.750-0.770 (Natural Gas) Natural Gas - CWF_{NG} 0.835-0.886 (Gasoline) Gasoline - CWF California Phase II - CWF_{blend}
Weight Fraction CO2	T4	X	X	X						81-85	5 (4,3)	R	0.000-0.300 Natural Gas - WF_{NG}
Input Record Type	TR	R	R	R						1-2	2	A	TR
Unrounded Test Result	TR	X	X	X						4-15	12 (11,7)	R	0000.0000000-9999.9999999

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel Net Heating Value	T4	X	X	X						68-73	6	I	Units are BTU/Pound 018284-019000 (Gasoline) Gasoline - NHV Gasoline (dual fuel) - NHV, NHV_{per}, NHV_{g} 018300-019100 (Diesel) Diesel(single fuel) - NOT REQUIRED Diesel (dual fuel) - NHV_{pet} 008000-009000 (Methanol) Methanol (single fuel) - NOT REQUIRED Methanol (dual fuel) - NHV_{alt} 008000-018000 (Methanol blend) Methanol blend (single fuel) - NOT REQUIRED Methanol blend (dual fuel) - NHV_{alt} , NHV_{50} 020000-040000 (Natural gas) Natural gas (single fuel) - NOT REQUIRED Natural gas (dual fuel) - NHV_{alt} 017000-019000 (California Phase II) California Phase II - NHV_{blend} 008000-018000 (Other alcohol) Other alcohol (not IOV CFEIS, dual fuel) - NHV_{alt} , NHV_{50} 018284-019000 (Gasoline) Gasoline - NHV California Phase II - NHV_{blend}

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel Density	T4	X	X	X						55-60	6 (5,3)	R	Units are pounds/gallon for liquid fuel and pounds/100 cu ft for gaseous fuels. 6.000-6.400 (Gasoline) Gasoline (single fuel) - NOT REQUIRED Gasoline (dual fuel) - D_{pet}, D_g 7.000-7.300 (Diesel) Diesel (single fuel) - NOT REQUIRED Diesel (dual fuel) - D_{pet} 6.500-6.700 (Methanol) Methanol (single fuel) - NOT REQUIRED Methanol (dual fuel) - D_{alt} 6.000-6.500 (Methanol blend) Methanol blend (single fuel) - NOT REQUIRED Methanol blend (dual fuel) - D_{alt}, D_{go} 1.000-10.000 (Natural gas) Natural gas - D_{NG} Natural gas (dual fuel) - D_{NG}, D_{alt} 5.000-7.000 (Other alcohol) Other alcohol (dual fuel, not IOV CFEIS) - D_{alt}, D_{go}
Fuel Specific Gravity	T4	X	X	X						62-66	5 (4,3)	R	0.719-0.770 (Gasoline) Gasoline - SG California Phase II - Sg_{blend} 0.844-0.882 (Diesel) Diesel - NOT REQUIRED 0.790-0.800 (Methanol) Methanol - SG 0.740-0.790 (Methanol blend) Methanol blend -SG 0.723-0.750 (California Phase II) California Phase II - Sg_{blend}

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel Batch Ineffective Date	T4	R	X	R						13-20	8	D	Valid calendar date. Note: Not required for Diesel.
Fuel Batch Calibration Date	T4	R	X	R						22-29	8	D	Valid calendar date. Note: Not required for Diesel.
Carbon Weight Fraction NMHC	T4	X	X	X						31-35	5 (4,3)	R	0.800-0.900 Natural gas - CWF_{NMHC}
Carbon Weight Fraction HC	T4	X	X	X						37-41	5 (4,3)	R	0.800-0.900 Natural gas - $CWF_{HC/NG}$
Exhaust Carbon Weight Fraction	T4	X	X	X						43-47	5 (4,3)	R	0.800-1.000 (Methanol) Methanol - CWF_{exHC} 0.800-1.000 (Methanol blend) Methanol blend - CWF_{exHC} 0.800-1.000 (California Phase II) California Phase II - CWF_{exHC} 0.000-1.000 California Phase II - CWF_{exHC}
Fuel Methanol Volume Fraction	T4	X	X	X						49-53	5 (4,3)	R	0.000-1.000 (Methanol) Methanol 0.000-1.000 (Methanol blend) Methanol blend

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

EPA/Manufacturer Test Data System (MTDS)
Input Data Record Layout

Field name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Report	Carry-Over	Carry-Across	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Barometric Pressure Units	T3	X	X	X						21-24	4	A	INHG - Inches of Mercury KPA - Kilopascals Default is 'INHG' *Note:* No entry needed for Evaporative Tests
NOx KH	T3	X	X	X						26-31	6 (5,4)	R	0.0000-9.9999 NOx Humidity Correction Factor *Note:* No entry needed for Evaporative, Cold CO, Light Truck Idle CO or Short Tests
Test Group Code	T3	X	X	X						33-39	7	A	Text *Note:* No entry needed for Cold CO, Light Truck Idle CO or Short Tests
Quick Check	T3	X	X	X						41-45	5 (4,2)	R	00.00-99.99 *Note:* Enter Coastdown Time (seconds).
Wait Time	T3	X	X	X						-1	2	I	01-99 *Note:* Only needed for Short Test
Warm Up	T3	X	X	X						50-51	2	I	01-99 *Note:* Only needed for Short Test
Restarts	T3	X	X	X						53-53	1	A	0-6 *Note:* Only needed for Short Test
Precondition Type	T3	X	X	X						55-55	1	A	U - Unloaded L - Loaded *Note:* Only needed for Short Test
Input Record Type	T4	R	R	R						1-2	2	A	T4
Fuel Batch Effective Date	T4	R	X	R						4-11	8	D	Valid calendar date. Note: Not required for Diesel.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

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Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	S1	R	R	R	R	R	R	R	1-2	2	A	S1
Process Code	S1	X	R	R	R	R	R	R	6-6	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Replace*: 'R' For *Delete*: 'D' For *Change*: 'N' For *Report*: 'P' For *Summary Report*: 'Y'
Data Base Code	S1	R	R	X	R	R	R		11-11	1	A	A - Manufacturers B - EPA VPCD (prev. CD) C - EPA TSD (prev. EOD) D - EPA MOD E - EPA FED (prev. FOSD) F - EPA ECTD G - EPA RDSD H - EPA AMD (prev. EPSD) *Note*: Default = "A"
Manufacturer Code	S1	R	R	R	R	R	R	R	12-15	4	I	Valid MANUFACTURER CODE
Shift Schedule Id	S1		R	R	R	R	R		16-19	4	A	Valid SHIFT SCHEDULE ID
Shift Schedule Description	S1	X	X	X		X			21-48	28	A	Text
Input Record Type	S2	R	R	R		R			1-2	2	A	S2

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Data Set Originator Code	S2	R	X	X		X			18-19	2	A	01 - Manufacturer 10 - EPA VPCD (prev. CERT) 11 - EPA TSD (prev. EOD) 12 - EPA MOD 13 - EPA FED (prev. FOSD) 14 - EPA ECTD 15 - EPA RDSD 16 - EPA AMD (prev. EPSD) 99 - Other
LNS Error Severity Code	S2			X					21-21	1	I	0 - 5
Input Record Type	S3	R	R	R		R			1-2	2	A	S3
Non-Cruise Declutch Speed	S3	R	X	R		X			5-9	5 (4,1)	R	000.0-200.0, *asterisk*
Non-Cruise 1-2 Gear SS	S3	R	X	R		X			11-15	5 (4,1)	R	000.0-200.0, *asterisk*
Non-Cruise 2-3 Gear SS	S3	X	X	X		X			17-21	5 (4,1)	R	000.0-200.0, *asterisk*
Non-Cruise 3-4 Gear SS	S3	X	X	X		X			23-27	5 (4,1)	R	000.0-200.0, *asterisk*
Non-Cruise 4-5 Gear SS	S3	X	X	X		X			29-33	5 (4,1)	R	000.0-200.0, *asterisk*
Non-Cruise 5-6 Gear SS	S3	X	X	X		X			35-39	5 (4,1)	R	000.0-200.0, *asterisk*

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	S4	R	R	R		R			1-2	2	A	S4
Cruise Declutch Speed	S4	R	X	R		X			5-9	5 (4,1)	R	000.0-200.0, *asterisk*
Cruise 1-2 Gear SS	S4	R	X	R		X			11-15	5 (4,1)	R	000.0-200.0, *asterisk*
Cruise 2-3 Gear SS	S4	X	X	X		X			17-21	5 (4,1)	R	000.0-200.0, *asterisk*
Cruise 3-4 Gear SS	S4	X	X	X		X			23-27	5 (4,1)	R	000.0-200.0, *asterisk*
Cruise 4-5 Gear SS	S4	X	X	X		X			29-33	5 (4,1)	R	000.0-200.0, *asterisk*
Cruise 5-6 Gear SS	S4	X	X	X		X			35-39	5 (4,1)	R	000.0-200.0, *asterisk*
Input Record Type	S5			R					1-2	2	A	S5
Mean Calculated Non-Cruise Declutch Speed	S5			R					5-9	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Non-Cruise 1-2 Gear SS	S5			R					11-15	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Non-Cruise 2-3 Gear SS	S5			R					17-21	5 (4,1)	R	000.0-200.0, *asterisk*

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Mean Calculated Non-Cruise 3-4 Gear SS	S5			R					23-27	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Non-Cruise 4-5 Gear SS	S5			R					29-33	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Non-Cruise 5-6 Gear SS	S5			R					35-39	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Non-Cruise Declutch Speed	S5			R					41-45	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Non-Cruise 1-2 Gear SS	S5			R					47-51	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Non-Cruise 2-3 Gear SS	S5			R					53-57	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Non-Cruise 3-4 Gear SS	S5			R					59-63	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Non-Cruise 4-5 Gear SS	S5			R					65-69	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Non-Cruise 5-6 Gear SS	S5			R					71-75	5 (4,1)	R	000.0-200.0, *asterisk*

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	S6			R					1-2	2	A	S6
Mean Calculated Cruise Declutch Speed	S6			R					5-9	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Cruise 1-2 Gear SS	S6			R					11-15	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Cruise 2-3 Gear SS	S6			R					17-21	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Cruise 3-4 Gear SS	S6			R					23-27	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Cruise 4-5 Gear SS	S6			R					29-33	5 (4,1)	R	000.0-200.0, *asterisk*
Mean Calculated Cruise 5-6 Gear SS	S6			R					35-39	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Cruise Declutch Speed	S6			R					41-45	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Cruise 1-2 Gear SS	S6			R					47-51	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Cruise 2-3 Gear SS	S6			R					53-57	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Cruise 3-4 Gear SS	S6			R					59-63	5 (4,1)	R	000.0-200.0, *asterisk*

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Minimum Calculated Cruise 4-5 Gear SS	S6			R					65-69	5 (4,1)	R	000.0-200.0, *asterisk*
Minimum Calculated Cruise 5-6 Gear SS	S6			R					71-75	5 (4,1)	R	000.0-200.0, *asterisk*
Input Record Type	S7	R	R	R		R			1-2	2	A	S7
Drive Schedule Name Code	S7	R	X	X		X			4-6	3	A	*asterisk* 002 - FTP (Cert) 003 - HWFE (Cert) 021 - LA4 (prep only) 022 - LA4 023 - 505 031 - HWFE (no warmup) 101 - SCC#1 102 - SCC#2 103 - BIH (Auto) 104 - BIH (Manual) 111 - 3BagHWFE 112 - 3Bag505 121 - LA4 (perturbed1.5) *Note*: "Prep" shift schedule data must be included when '002' is entered. "Warm-up" shift schedule data must be included when '003' is entered.
Input Record Type	S8	R	R	R		R			1-2	2	A	S8
Model Year	S8	R	R	R		R			4-7	4	I	1970-2100, *asterisk*

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Deletion Code	S8					X			9-9	1	A	D *Note*: Entering a 'D' in this field requires the entry of one or more model year(s) which had previously been entered for this Shift Schedule.
Input Record Type	SC	R	R	R		R			1-2	2	A	SC
Comments	SC	X	X	X		X			3-80	78	A	Text *Note*: Up to ten occurrences of this SC record may be entered.
Input Record Type	SP	R	R	R		R			1-2	2	A	SP
Shift Point Number	SP		R			X			3-5	3	I	0-160, *asterisk* *Note*: Modifying a shift point requires a matching SHIFT TIME for the Shift Schedule. The new number is system generated.[1]
Shift Time	SP	R	R	R		R			7-12	6 (5,1)	R	0000.0-2500.0, *asterisk* *Note*: Modifying a shift point requires a matching SHIFT POINT NUMBER for the Shift Schedule. The new number is system generated.
Shift Speed	SP	X	X	X		X			14-18	5 (4,1)	R	000.0-200.0, *asterisk*

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Shift Action Code	SP	X	X	X		X			20-21	2	A	*asterisk* 00 - Declutch 10 - Declutch 20 - Declutch 30 - Declutch 40 - Declutch 50 - Declutch 60 - Declutch 12 - Upshift 1 to 2 23 - Upshift 2 to 3 34 - Upshift 3 to 4 45 - Upshift 4 to 5 56 - Upshift 5 to 6 65 - Downshift 6 to 5 54 - Downshift 5 to 4 43 - Downshift 4 to 3 32 - Downshift 3 to 2 21 - Downshift 2 to 1 64 - Down-skipshift 6 to 4 63 - Down-skipshift 6 to 3 62 - Down-skipshift 6 to 2 61 - Down-skipshift 6 to 1 53 - Down-skipshift 5 to 3 52 - Down-skipshift 5 to 2 51 - Down-skipshift 5 to 1 42 - Down-skipshift 4 to 2 41 - Down-skipshift 4 to 1 31 - Down-skipshift 3 to 1 97 - Use shift indicator light 98 - Creeper gear 99 - Alternative shift action ** - delete shift point.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Shift Schedule
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Replace	Delete	Change	Report	Summary Report	Position	Length	Data Type	Valid Range/Entry Criteria
Shift Point Screen Text	SP	X	X	X		X			23-31	9	A	Text, *asterisk* *Note*: Enter only if SHIFT ACTION CODE is equal to '99'.
Shift Point H/V Indicator	SP			X					33-33	1	A	'H' or 'V'
Shift Point L/R Indicator	SP			X					35-35	1	A	'L' or 'R'
Exception Point Code	SP	X	X	X		X			37-37	1	A	*asterisk* N or *blank* - Include this shift point speed in the VDA shift patten calculations. Y or X - Do not include this shift point speed in the VDA shift patten calculations.
Cruise Point	SP			X					39-39	1	A	'Y'
EOT Input Record Type Code	ZZ	R	R	R	R	R	R	R	1-2	2	A	ZZ - End of Transaction

asterisk - If the vehicle manufacturer (or TSD user) enters an '*' (indicated by *asterisk* in the "Valid Range/Entry Criteria" column) for a field value, it indicates his/her desire to delete the stored contents of the data element.

[1] For the insertion of a new shift point, submit the SHIFT TIME but not SHIFT POINT NUMBER. The system will automatically generate and assign the SHIFT POINT NUMBER.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

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Summary Sheet
Input Data Record Layout

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Summary Sheet
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Replace	Delete	Summary Report	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	X1	R	R	R	R	R	1-2	2	A	X1
Process Code	X1	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Replace*: 'R' For *Delete*: 'D' For *Summary Report*: 'Y' For *Reprocess*: 'S'
Manufacturer Code	X1	R					4-7	4	I	Valid MANUFACTURER CODE
Engine Family Name	X1	R	R	R		R	9-20	12	A	Valid ENGINE FAMILY NAME
Engine System Number	X1	X	X	X		X	22-23	2	I	01-99 *Note:* Default is '01'.
Summary Sheet Index Number	X1		R	R	R	R	25-33	9	A	Valid SUMMARY SHEET INDEX Number
Summary Sheet Version Number	X1		X	X	X	X	35-36	2	I	00-99 *Note:* Default is '00'.
Evaporative Family Name	X1	X	X	X		X	38-49	12	A	Valid EVAPORATIVE FAMILY NAME
Evaporative System Number	X1	X	X	X		X	51-52	2	I	01-99 *Note:* Defaults to '01' if Evaporative Family Name has been entered.
Vehicle Type Indicator Code	X1	R					54-56	3	A	LDV - Light Duty Vehicle LDT - Light Duty Truck
Input Record Type	X2	R	R				1-2	2	A	X2

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Summary Sheet
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Transaction Type: Replace	Transaction Type: Delete	Transaction Type: Summary Report	Transaction Type: Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Manufacturer Code	X2	R	R				4-7	4	I	Valid MANUFACTURER CODE *Note*: Default is MANUFACTURER CODE supplied on X1 input record.
Division Code	X2	R	R				9-10	2	I	Valid DIVISION CODE *Note*: Must be associated with a MANUFACTURER CODE.
Car Line Code	X2	R	X				12-14	3	I	Valid CAR LINE CODE
Sales Area Code	X2	R	X				16-17	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle Tier 1
Transmission Type	X2	R	R				19-20	2	A	C4 - Creeper/Manual 4-speed M3 - Manual 3-speed B3 - Both C4 & M3 C5 - Creeper/Manual 5-speed M4 - No Creeper/Manual 4-speed B4 - Both C5 & M4 M5 - Manual 5-speed M6 - Manual 6-speed A3 - No Lockup/Automatic/3-speed L3 - Lock-up/Automatic/3-speed A4 - No Lockup/Automatic/4-Speed L4 - Lock-up/Automatic/4-speed S2 - Semi-Automatic 2-speed S3 - Semi-Automatic 3-speed S4 - Semi-Automatic 4-speed S5 - Semi-Automatic 5-speed AV - Automatic variable Gear Ratios

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Summary Sheet
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Replace	Delete	Summary Report	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Drive System Code	X2	R	X				22-22	1	A	R - Rear-wheel Drive F - Front-wheel Drive 4 - 4-wheel Drive
Transmission Overdrive Code	X2	R	X				24-24	1	A	1 - No Gear Ratio < 1.0 2 - Top Gear Ratio < 1.0 3 - Electrically Operated O/D 4 - Computer Controlled Automatic Electronic O/D 5 - Computer Controlled Automatic Electronic O/D with Lock-out Switch
Shift Indicator Light Code	X2	X	X				26-26	1	A	Y, N, *blank* *Note*: Default is 'N'.
Number of Transmission Modes Code	X2	X	X				28-28	1	A	V - Continuously Variable, User-selectable C - Computer Controlled Multiple Gear Ratios 1-9 - Number of Discrete User-selectable Transmission Modes
Variable Lockup Point Code	X2	X	X				30-30	1	A	V - Continuously Variable C - Computer Controlled Lock-up 1-9 - Number of Discrete Lock-up RPM Ranges N/*blank* - No Variable Lock-up Point (Non lock-up transmission) *Note*: Default is 'N'.
Declutching/Freewheeling	X2	X	X				32-32	1	A	Y - Yes L - Yes, but with lock-out features N/*blank* - No *Note:* Default is 'N'.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Summary Sheet
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Replace	Delete	Summary Report	Reprocess	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	XC	R	R			R	1-2	2	A	XC
Summary Sheet Comments	XC	X	X			X	3-80	78	A	Text *Note:* Up to 12 occurrences of this XC record may be entered.
Input Record Type	XT	R	R				1-2	2	A	XT
Test Number	XT	R	X				4-10	7	I	Valid TEST NUMBER
EOT Input Record Type Code	ZZ	R	R	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

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Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	V1	R	R	R	R	R	R	1-2	2	A	V1
Process Code	V1	R	R	R	R	R	R	3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Delete*: 'D' For *Change*: 'N' For *Report*: 'P' For *Carry Over*: 'C'
Manufacturer Code	V1	R	R	R	R	R	R	5-8	4	I	Valid MANUFACTURER CODE
Division Code	V1	R	R	R	R	R	R	10-11	2	I	Valid DIVISION CODE *Note*: Must be associated with a MANUFACTURER CODE.
Vehicle Id	V1	R	R	R	R	R	R	13-32	20	A	Text
Vehicle Configuration Number	V1		R	R	R	R	R	34-35	2	I	Must be a valid VEHICLE CONFIGURATION NUMBER for this MANUFACTURER CODE/VEHICLE ID combination. *Note*: MANUFACTURER CODE, VEHICLE ID, VEHICLE CONFIGURATION NUMBER, and CERTIFICATION MODEL YEAR combination must already exists in the data base.
Car Line Code	V1	R	X		X		X	37-39	3	I	Valid CAR LINE CODE
Actual Vehicle Model	V1	X	X		X			41-60	20	A	Text
Drive Code	V1	R	X		X			62-62	1	A	1 - Rear Drive, Left-hand Steering 2 - Rear Drive, Right-hand Steering 3 - Front Drive, Left-hand Steering 4 - Front Drive, Right-hand Steering 5 - 4-Wheel Drive, Left-hand Steering 6 - 4-Wheel Drive, Right-hand Steering

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Certification Model Year	V1	R	R	R	R		R	64-67	4	I	1970-2100 *Note:* Certification Model Year serves as FROM year for Carry Over
Certification Model To Year	V1						R	69-72	4	I	1970-2100
Source Code	V1	R	X		X			74-75	2	A	01 - Manufacturer *Note:* Default value is '01'.
Vehicle Purpose	V1	R	X		R		X	77-78	2	A	01 - Cert Emission Data 02 - Cert Durability Data 03 - Cert Fuel Economy Data 05 - Cert Development 09 - Interim 1994 Cert 22 - ICI Cert *Note:* The Change Transaction is not allowed for '02' - Cert Durability Data Vehicles.
Input Record Type	V2	R	R		R			1-2	2	A	V2
Design Curb Weight	V2	R	X		X			4-9	6	I	001000 ≤ WEIGHT ≤ 010000
Design Equivalent Test Weight	V2	R	X		X			11-16	6	I	001000 ≤ WEIGHT≤ 010000
MFR ETW Units Code	V2	R	X		X			18-18	1	A	P - Pounds K - Kilograms
Design Gross Vehicle Weight	V2	R	X		X			20-25	6	I	000000 - 999999
Displacement	V2	R	X		X			27-33	7 (6,1)	R	00000.0 ≤ DISPL ≤ 08193.5 *Note:* If reported in Cubic Inches, 40 ≤ DISPL ≤ 500. Convert to Cubic Centimeters.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Displacement Units	V2	R	X		X			35-37	3	A	E - Cubic Inches or Inches M - Cubic Centimeters or Millimeters CID - Cubic Inches Displacement CC - Cubic Centimeters CMM - Cubic Millimeters L - Liters
Rated Horsepower	V2	R	X		X			39-42	4	I	0025 ≤ RTD HP ≤ 0450
Engine Type Code	V2	R	X		X			44-45	2	A	01 - Otto Spark 02 - Stratified Charge 03 - Diesel 04 - Gas Turbine 05 - Rankine 06 - Stirling 07 - Hybrid 99 - Other *Note:* Must be 01-03 for Cert vehicles, 01-99 for Non-cert vehicles.
Number Of Cylinders	V2	R	X		X			47-48	2	I	02 ≤ CYLINDERS ≤ 12
Number of Valves per Cylinder	V2	R	X		X			50-51	2	I	00 - 99
Compression Ratio	V2	R	X		X			53-57	5 (4,1)	R	006.0 ≤ RATIO ≤ 025.0
Ignition Timing #1	V2	X	X		X			59-62	4 (3,1)	R	00.0 - 99.0
Ignition Timing #1 Before/After Code	V2	X	X		X			64-64	1	A	A - After B - Before *Note:* Required if IGNITION TIMING #1 has been entered.
Ignition Timing RPM	V2	X	X		X			66-70	5	I	00200 ≤ ITR ≤ 03200 *Note:* Required if IGNITION TIMING #1 has been entered.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Ignition Timing RPM Tolerance	V2	X	X		X			72-75	4	I	0 - 200 Required if IGNITION TIMING #1 has been entered. If the tolerance is asymmetrical around the specification, leave the field blank and indicate the tolerances in comments.
Running Change Number Text	V2	X	X		X			77-87	11	A	Text
Input Record Type	V3	R	R		R		R	1-2	2	A	V3
Ignition Timing Degree Tolerance	V3	X	X		X			3-5	3	I	0 - 10 Enter only if IGNITION TIMING #1 is not blank. If the tolerance is asymmetrical around the specification, leave the field blank and indicate the tolerances in comments.
Ignition Timing Gear Code	V3	X	X		X			7-7	1	A	N - Neutral D - Drive P - Park *Note:* Entered only if IGNITION TIMING #1 is not blank.
Idle RPM	V3	R	X		X			9-13	5	I	00200 ≤ IDLE RPM ≤ 03200 *Note:* Value must be taken from tune-up specifications.
Idle RPM Tolerance	V3	R	X		X			15-18	4	I	IDLE RPM TOL ≤ 0200 *Note:* Must be blank if IDLE RPM entered.
I Gear Code	V3	R	X		X			19-19	1	A	N - Neutral D - Drive P - Park E - Either Neutral or Drive *Note:* Enter when IDLE RPM > 0.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
A/C Installed	V3	R	X		X			21-21	1	A	Y - Yes N - No
Engine Code	V3	R	X		X		X	23-36	14	A	Text *Note:* May be left blank on VI submissions describing Durability-data vehicles.
Engine Family Name	V3	R	X		X		R	38-49	12	A	Valid ENGINE FAMILY NAME
Engine System Number	V3	R	X		X		R	51-52	2	I	Valid ENGINE SYSTEM NUMBER from ESI file. *Note:* DF Type must be identified in the engine family information. This field is required to process Engine Family and System information. The system shall assign a value of '01' as a default if Engine Family Name is correct and the value of Engine System Number is null, invalid on input, or incorrect. A null value shall be assigned if Engine Family Name is incorrect.
Emission Control System - Exhaust	V3	X	X		X			54-56	3	I	Exhaust: 002 - Engine Modification 005 - Thermal Reactor 008 - Exhaust Recycle 010 - Air Pump 011 - Pulsating Air System 016 - Oxidation Catalyst 017 - Reduction Catalyst 018 - Three-way Catalyst 019 - Closed Loop Control of Air/Fuel Ratio 020 - Three-way Catalyst and Closed Loop Control of Air/Fuel Ratio 021 - Closed Loop Air Injection 099 - Other

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Emission Control System - Exhaust	V3	X	X		X			58-60	3	I	Exhaust: 002 - Engine Modification 005 - Thermal Reactor 008 - Exhaust Recycle 010 - Air Pump 011 - Pulsating Air System 016 - Oxidation Catalyst 017 - Reduction Catalyst 018 - Three-way Catalyst 019 - Closed Loop Control of Air/Fuel Ratio 020 - Three-way Catalyst and Closed Loop Control of Air/Fuel Ratio 021 - Closed Loop Air Injection 099 - Other
Emission Control System - Exhaust	V3	X	X		X			62-64	3	I	Exhaust: 002 - Engine Modification 005 - Thermal Reactor 008 - Exhaust Recycle 010 - Air Pump 011 - Pulsating Air System 016 - Oxidation Catalyst 017 - Reduction Catalyst 018 - Three-way Catalyst 019 - Closed Loop Control of Air/Fuel Ratio 020 - Three-way Catalyst and Closed Loop Control of Air/Fuel Ratio 021 - Closed Loop Air Injection 099 - Other

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Emission Control System - Exhaust	V3	X	X		X			66-68	3	I	Exhaust: 002 - Engine Modification 005 - Thermal Reactor 008 - Exhaust Recycle 010 - Air Pump 011 - Pulsating Air System 016 - Oxidation Catalyst 017 - Reduction Catalyst 018 - Three-way Catalyst 019 - Closed Loop Control of Air/Fuel Ratio 020 - Three-way Catalyst and Closed Loop Control of Air/Fuel Ratio 021 - Closed Loop Air Injection 099 - Other
Emission Control System - Exhaust	V3	X	X		X			70-72	3	I	Exhaust: 002 - Engine Modification 005 - Thermal Reactor 008 - Exhaust Recycle 010 - Air Pump 011 - Pulsating Air System 016 - Oxidation Catalyst 017 - Reduction Catalyst 018 - Three-way Catalyst 019 - Closed Loop Control of Air/Fuel Ratio 020 - Three-way Catalyst and Closed Loop Control of Air/Fuel Ratio 021 - Closed Loop Air Injection 099 - Other
Emission Control System - Evaporative	V3	X	X		X			74-76	3	A	Evaporative: 101 - Crankcase 102 - Canister 103 - Tank 104 - None 105 - Canister and Charcoal Air Cleaner 199 - Other

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Input Record Type	V4	R	R		R		R	1-2	2	A	V4
Evaporative Family Name	V4	R	X		X		R	3-14	12	A	Valid EVAPORATIVE FAMILY NAME
Evaporative System Number	V4	R	X		X		R	16-17	2	I	Valid EVAPORATIVE SYSTEM NUMBER from ESI file. *Note 1:* Not Required for 'Diesel'. *Note 2:* DF Type must be identified in the evaporative family information. If DF Type is missing, an error or warning condition shall be generated, however this shall not prevent processing of the VI data. This field is required to process Evaporative Family and System information. The system shall assign a value of '01' as a default if Evaporative Family Name is correct and the value of Evaporative System Number is null, invalid on input, or incorrect. A null value shall be assigned if Evaporative Family Name is incorrect.
Design Full Tank Drive Axle Weight	V4	R	X		X			19-24	6	I	000250 ≤ WEIGHT ≤ 008000
Design Empty Tank Drive Axle Weight	V4	R	X		X			26-31	6	I	000200 ≤ WEIGHT ≤ 008000
Design 40% Drive Axle Weight	V4	R	X		X			33-38	6	I	000000 - 999999
MFR Weight Unit Code	V4	R	X		X			40-40	1	A	P - Pounds K - Kilograms

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Sales Area Code	V4	R	X		X		X	42-43	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle Tier 1
Sales Area Code	V4	R	X		X		X	45-46	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle Tier 1
Sales Area Code	V4	R	X		X		X	48-49	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle Tier 1
Sales Area Code	V4	R	X		X		X	51-52	2	A	CA - California FA - Federal all altitude NL - National LEV CF - Clean Fuel Vehicle CT - Clean Fuel Vehicle Tier 1
Input Record Type	V5	R	R		R			1-2	2	A	V5
Tire Manufacturer	V5	R	X		X			3-13	11	A	Text *Note:* Required if MFR COASTDOWN TIME is entered.
Tire Construction Code	V5	R	X		X			15-15	1	A	1 - Bias Belted 2 - Radial 3 - Bias *Note:* Required if MFR COASTDOWN TIME is entered.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Recommended In-Use Front Tire Pressure	V5	R	X		X			17-19	3	I	000 - 999 *Note:* Required if MFR COASTDOWN TIME is entered.
Recommended In-Use Rear Tire Pressure	V5	R	X		X			21-23	3	I	000 - 999 *Note:* Required if MFR COASTDOWN TIME is entered.
Tire Pressure Units	V5	R	X		X			25-28	4	A	INHG - Inches of Mercury MMHG - MMs of Mercury CMHG - CMs of Mercury PSI - Pounds per Square Inch PA - Pascals KPA - Kilopascals
Axle Ratio	V5	R	X		X			30-33	4 (3,2)	R	2.00 ≤ RATIO ≤ 6.00
N/V Ratio	V5	R	X		X			35-39	5 (4,1)	R	020.0 ≤ RATIO ≤ 095.0
Tire and Rim Sizes	V5	R	X		X			41-50	10	A	Text *Note:* Must be the tire and rim diameter imprinted on the sidewall.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Transmission Configuration	V5	R	X		X			52-53	2	A	00 - C-4 (Creeper) (M-4) Manual 4-speed 01 - Auto Automatic 02 - M-3 Manual 3-speed 03 - M-4 (No Creeper) Manual 4-speed 04 - M-5 Manual 5-speed 05 - S-A Semi-Automatic 06 - A-3 (No Lockup) Automatic/3-speed 07 - L-3 Lock-up/Automatic/3-speed 08 - A-4 (No Lockup) Automatic/4-Speed 09 - L-4 Lock-up/Automatic/4-speed 10 - C-5 (Creeper) (M-5) Manual 5-speed 15 - S-2 Semi-Automatic 2-speed 16 - S-3 Semi-Automatic 3-speed 17 - S-4 Semi-Automatic 4-speed 18 - S-5 Semi-Automatic 5-speed 19 - A-V Automatic variable Gear Ratios 20 - M-6 Manual 6-speed 21 - A-5 (No Lockup) Automatic/5-speed 22 - L-5 Lock-up/Automatic/5-speed

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Multi-Mode Position Code	V5	X	X		X			55-55	1	A	P - Power E - Economy M - Mid-range O - Other
Odometer Units Code	V5	R	X		X			57-57	1	A	M - Miles K - Kilometers
Odometer Correction Sign	V5	R	X		X			59-59	1	A	'+' - System Miles = (Test Odometer Reading * Correction Factor) + Initial System Miles '-' - System Miles = (Test Odometer Reading - Initial System Miles) * Correction Factor
Odometer Correction Initial	V5	R	X		X			61-68	8 (7,1)	R	000000.0 - 999999.9
Odometer Correction Factor	V5	R	X		X			70-75	6 (5,4)	R	0.0000 - 9.9999
Input Record Type	VP	R	R	R	R			1-2	2	A	VP
Evaporative System Information Process Code	VP	X	R	R	R			3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Change*: 'N' For *Delete*: 'D'

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Evaporative Emission Code	VP	R	X		X			5-20	16	A	Text *Note:* Required if test vehicle is gasoline fueled. Leave blank if the vehicle is diesel-powered or if submission describes a gasoline-fueled durability-data vehicle. A value can be entered for each combination of CANISTER TYPE CODE, BED VOLUME PER CANISTER, and WORKING CAPACITY PER CANISTER.
Canister Type Code	VP	R	R	R	R			22-22	1	A	E - Evaporative R - Refueling B - Both N - None *Note:* This field can have multiple values.
Bed Volume Per Canister	VP	R	X		X			24-28	5	I	00000 - 99999 *Note:* Value reported must be in Cubic Centimeters. This field can have multiple values.
Working Capacity Per Canister	VP	R	X		X			30-33	4	I	0000 - 9999 *Note:* Value reported must be in Grams. This field can have multiple values.
Total Number of Canisters	VP	R	X		X			35-36	2	I	00-99 *Note:* A value can be entered for each combination of CANISTER TYPE CODE, BED VOLUME PER CANISTER, and WORKING CAPACITY PER CANISTER.
Alternate Canister Loading Rate For The 3-Diurnal Test	VP	X	X		X			38-42	5 (4,1)	R	000.0 - 999.9 *Note:* Enter if loading rate is other than 15 grams butane per hour. Value reported must be in Grams. A value can be entered for each combination of CANISTER TYPE CODE, BED VOLUME PER CANISTER, and WORKING CAPACITY PER CANISTER.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Catalyst Preheating Method Code	VP	R	X		X			44-44	1	I	0 - None 1 - Electric-metallic 2 - Electric Non-metallic 3 - Non-electric Metallic 4 - Non-electric Non-metallic *Note:* A value can be entered for each combination of CANISTER TYPE CODE, BED VOLUME PER CANISTER, and WORKING CAPACITY PER CANISTER.
Input Record Type	VF	R	R	R	R			1-2	2	A	VF
Fuel Systems Information Process Code	VF	X	R	R	R			3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Change*: 'N' For *Delete*: 'D'
Emission Standards Fuel Type Code	VF	R	R	R	R			5-7	3	A	G - Gasoline GM - Gasoline/Methanol GE - Gasoline/Ethanol D - Diesel M - Methanol E - Ethanol C - Compressed Natural Gas (1994-1997) CD - CNG/Diesel L - Liquid Petroleum Gas (1994-1997) CNG - Compressed Natural Gas (1998 & later) LNG - Liquefied Natural Gas LPG - Liquid Petroleum Gas (1998 & later) N - Not Applicable *Note:* A minimum of one code is required for entry.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Fuel System MFR/Model	VF	R	X		X			9-18	10	A	Text *Note:* A value can be entered for each emission standards fuel type.
MFR Nominal Main Fuel Tank Capacity	VF	R	X		X			20-25	6 (5,1)	R	0005.0 ≤ MNMTC ≤ 0099.0 *Note:* Enter volume in the units specified in tank capacity units code. A value can be entered for each Emissioo Standards Fuel Type Code entered.
MFR Nominal Auxiliary Fuel Tank Capacity	VF	X	X		X			27-31	5 (4,1)	R	005.0 ≤ MNATC ≤ 050.0 *Note:* Must be blank if vehicle has no auxiliary fuel tank. Enter volume in the units specified in MFR FUEL TANK CAPACITY UNITS CODE. A value can be entered for each Emission Standards Fuel Type Code entered.
MFR Fuel Tank Capacity Units Code	VF	R	X		X			33-34	2	A	G - Gallons L - Liters P - Pounds GM - Grams KG - Kilograms *Note:* Required if MFR NOMINAL AUXILIARY TANK CAPACITY or MFR NOMINAL MAIN FUEL TANK CAPACITY is entered. A value can be entered for each Emission Standards Fuel Type Code entered.
Input Record Type	VT	R	R	R	R			1-2	2	A	VT
Test Information Process Code	VT	X	R	R	R			3-3	1	A	For *Add*: 'A' or *blank* - ' ' For *Modify*: 'M' For *Change*: 'N' For *Delete*: 'D'

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Test Procedure Code	VT	R	R	R	R			5-6	2	I	02, 03, 09, 10, 11, 13-17, 21-47, 71-79 *Note:* The codes listed above are defined in the *Test Processing Systems - Disposition Assignment* document. Multiple combinations of TEST PROCEDURE CODE and VI FUEL TYPE code can be entered.
VI Fuel Type Code	VT	R	R	R	R			8-9	2	I	06 - Unleaded (at EPA-96 RON) 09 - Diesel (at EPA-#2 Diesel) 17 - Leaded (at EPA-Ind 15) 22 - Special Unleaded-91 RON 23 - Carb Phase II Gasoline (Cert) 24 - Cold CO Regular (Cert) 25 - Cold CO Premium (Cert) 30 - Methanol (Cert Other) 31 - Methanol (Cert M10) 32 - Methanol (Cert M50) 33 - Methanol (Cert M85) 34 - Methanol (Cert M100) *Note:* This field may not be altered once EPA tests have been conducted using this specification. Multiple combinations of TEST PROCEDURE CODE and VI FUEL TYPE code can be entered.

Transaction Type: R = Required X = Optional * * = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Shift Schedule Database Code	VT	X	X		X			11-11	1	A	A - Manufacturers (for Cert) B - EPA VPCD (prev. CD) C - EPA TSD (prev. EOD) D - EPA MOD E - EPA FED (prev. FOSD) F - EPA ECTD G - EPA RDSD H - EPA AMD (prev. EPSD) *Note:* The value entered is ignored if this is a Certification or Fuel Economy vehicle. Defaults to 'A'. This field may not be altered once EPA tests have been conducted using this specification. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Shift Schedule Id	VT	X	X		X			13-16	4	A	Valid SHIFT SCHEDULE ID *Note:* This field is not required for Certification Durability Vehicles. This field may not be altered once EPA tests have been conducted using this specification. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Shift Indicator Light	VT	R	X		X			18-18	1	A	1 - Not Equipped 2 - Equipped, not shifted by SIL 3 - Equipped, shifted by SIL 5 - Equipped, shifted by Survey Schedule *Note:* Default is '1'. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Running Loss Fuel Temp Profile DB Code	VT	X	X		X			20-20	1	A	A - Manufacturers (for Cert) B - EPA VPCD (prev. CD) C - EPA TSD (prev. EOD) D - EPA MOD E - EPA FED (prev. FOSD) F - EPA ECTD G - EPA RDSD H - EPA AMD (prev. EPSD) *Note:* The value entered is ignored if this is a Certification or Fuel Economy vehicle. Defaults to 'A'. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Running Loss Fuel Temp Profile Id	VT	X	X		X			22-25	4	A	Valid FUEL TEMPERATURE PROFILE ID. *Note:* This field is not required for certification durability vehicles. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Side Fan Cooling Code	VT	R	X		X			27-27	1	A	Y - Yes, equipped with side fan N - No, not equipped with side fan *Note:* This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
ACHP Code	VT	R	X		X			29-29	1	A	Y - Yes (Simulate Air Conditioning Horse Power) N - No (Do not Simulate Air Conditioning Horse Power) *Note:* This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Equivalent Test Weight Coastdown Vehicle	VT	X	X		X			31-35	5	I	00000 - 99999 *Note:* This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
MFR Coastdown Time	VT	X	X		X			37-41	5 (4,2)	R	00.00 - 99.99 *Note:* This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Actual Dyno H.P.	VT	X	X		X			43-47	5 (4,1)	R	004.0 ≤ ACT DYNO HP ≤ 035.0 *Note:* This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Dynamometer Equation Type Code	VT	X	X		X			49-49	1	A	'A' or 'B' - Text *Note:* This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Electric Dynamometer Target Coefficient A	VT	X	X		X			51-57	7 (6,3)	R	000.000 - 999.999 *Note:* Value can be negative or positive; sign bit is required. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Electric Dynamometer Target Coefficient B	VT	X	X		X			59-65	7 (6,5)	R	0.00000 - 9.99999 *Note:* Value can be negative or positive; sign bit is required. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
Electric Dynamometer Target Coefficient C	VT	X	X		X			67-74	8 (7,6)	R	0.000000 - 9.999999 *Note:* Value can be negative or positive; sign bit is required. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Electric Dynamometer Set Coefficient A	VT	X	X		X			76-82	7 (6,3)	R	000.000 - 999.999 *Note:* Value can be negative or positive; sign bit is required. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Electric Dynamometer Set Coefficient B	VT	X	X		X			84-90	7 (6,5)	R	0.00000 - 9.99999 *Note:* Value can be negative or positive; sign bit is required. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Electric Dynamometer Set Coefficient C	VT	X	X		X			92-99	8 (7,6)	R	0.000000 - 9.999999 *Note:* Value can be negative or positive; sign bit is required. This information can be entered for each combination of TEST PROCEDURE CODE and VI FUEL TYPE CODE.
Input Record Type	VC	R	R		R		R	1-2	2	A	VC
VI Comments	VC	X	X		X		X	3-80	78	A	Text *Note:* Multiple comment input records permitted. 'Replace' deletes old comments and adds new comments, while 'Modify' adds additional input comments to previously stored comments if any.

Transaction Type: R = Required X = Optional * " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

Vehicle Information
Input Data Record Layout

Field Name	Record Type	Transaction Type: Add	Modify	Delete	Change	Report	Carry Over	Position	Length	Data Type	Valid Range/Entry Criteria
EOT Input Record Type Code	ZZ	R	R	R	R	R	R	1-2	2	A	ZZ - End of Transaction

Transaction Type: R = Required X = Optional " " = Not Available.
Data Type: A = Alphanumeric D = Date I = Integer R = Real

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APPENDIX A

Document Change Summaries for
Subsystem Input Data Record Layouts

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CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - CAFE	
Version Number (SDC Doc Number): SDC-0055-078-LM-5023B	
Date: 6/20/96	**Author:** L. Miller
WP File Name: cafe.rvb	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/15/96		L.M.		Delete '*Note:* Concatenation with INDEX NUMBER must represent a unique BASIC ENGINE INDEX within a model year in the IOV CFEIS data base.' from the VR/EC for Manufacturer Code in the 'FS' Input Record.	CAFE does not have an index number and therefore the 'Note' does not have any relevance.
3/15/96		L.M.		Change 'X' to 'R' in the Add Transaction and the Replace Transaction in the 'F1' input record for the following fields: Cubic Inch Displacement, Number of Cylinders, Combustion Cycle, Fuel Injection, Number of Venturi, Catalyst, Feedback Fuel System, Variable Displacement, Turbocharged, Supercharged, and Engine Block Descriptors.	These fields are the key fields need to identify the Basic Engine and CAFE Basic Engine and are therefore required fields.
3/15/96		L.M.		Delete 'R' in the Delete and Reprocess Transaction in the 'FM' record for the following fields: Input Record type, Division Code, and Car Line Code.	Deletion is from the Basic Engine and the associated entities. Therefore all related CAFE information is deleted rather than a selective Car Line delete within CAFE.
3/18/96		L.M.		Change Record Type from 'FR' to 'FL' for fields: Lockup Range Number, Lockup RPM First, Lockup RPM Second, Lockup RPM Third, Lockup RPM Fourth, Lockup RPM Fifth and Lockup RPM Sixth, and realign position for each field.	Separate Lockup Information from Gear Ratio Information.

Date	SPCR	Made By	Section	Change	Reason for Change
3/18/96		L.M.		Add 'Input Record Type' field for Lockup Range with 'X' specified for Add and Replace Transaction with a position of '1-2', with a length of '1', with a Data Type of 'A', and with a VR/EC of 'FL'.	Separate Lockup Information from Gear Ratio Information.
4/4/96		L.M.		Change Manufacturer Code Data Type from 'A' to 'I'.	Manufacturer Code is an integer not an alphanumeric field.
5/22/96		L.M.		Insert Index Number field before Model Year in G1 input record with Add, Replace, Delete and Reprocess transaction codes of 'R', a position of 9-11 with a length of 3, a data type of I and VR/EC of '001-999'	Provide changes to CAFE for Index Number identification rather than 14 key fields.
5/22/96		L.M.		Insert Transmission Class field with 'R' for Add and Replace Transactions, with position '10-12', with a length of 3, with data type 'A' and a VR/EC of "001-999 Linkage field to 'F2' and 'FF' input records." after Car Line Code in the 'FM' input record and realign fields: Guzzler Exempt, Optional Displacement, Optional Displacement Code, Unrounded Unadjusted City FE, Unrounded Unadjusted Hwy FE, Unrounded Unadjusted Comb FE, Rounded Adjusted City FE, Rounded Adjusted Hwy FE, Rounded Adjusted Comb FE, Annual Fuel Cost, Approval Date, New Label Indicator, Fuel Usage, and Sales Data Suppression Code.	Add Transmission Class field which serves as a linkage field between the 'F2' input record and the 'FM' and 'FF' input records per NVFEL direction.
5/22/96		L.M.		Insert Transmission Class field with 'R' for Add and Replace Transactions, with position '16-18', with a length of 3, with data type 'A' and a VR/EC of "001-999 Linkage field to 'F2' and 'FF' input records." after Car Line Code in the 'FM' input record and realign fields: Guzzler Exempt, Displacement, Displacement Units, and Fuel Usage.	Add Transmission Class field which serves as a linkage field between the 'F2' input record and the 'FM' and 'FF' input records per NVFEL direction.

Date	SPCR	Made By	Section	Change	Reason for Change
5/22/96		L.M.		Add Division Code, Car Line Code, Transmission Class after 'FF' Input Record Type field. Add the Transmission Configuration field after the 'DVC' field. Assign 'R' to Add and Replace Transaction for each input field. Assign new positions and use 'FM' VR/EC entry for the Division Code, Car Line Code and Transmission Class fields. Add '01-99 Linkage field to 'FR' and 'FL' input records.' for the VR/EC for the Transmission Configuration field.	Add Division Code, Car Line Code, Transmission Class fields to 'FF' input records per NVFEL direction.
5/22/96		L.M.		Move Engine Code and place it after Axle Ratio and move Lockup Override and place it after RLHP.	NVFEL had requested a certain ordering of the FF input fields. This field was moved to accommodate this ordering.
5/22/96		L.M.		Reassign position for all ' FF' input fields.	NVFEL had requested a certain ordering of the FF input fields. All fields positions need reassigned due to the insertion and movement of fields.
5/22/96		L.M.		Add Manufacturer Code to 'FM' and 'FF' input record and realign position fields for remaining fields in those input records.	Manufacturer must be identified for model and subconfiguration.
5/22/96		L.M.		Add Transmission Configuration to FR and FL input records with 'R" for Add and Replace Transactions after Input Record Type and reorder remaining fields.	Add Transmission Configuration to FR and FL input records per NVFEL direction.
6/5/96		L.M.		Add "*Note:* Default is '00'." to VR/EC for Number of Venturi field.	Seung Park Review/Request.
6/5/96		L.M.		Add "*Note:* Default is 'Blank'." to VR/EC for Engine Block Descriptors field.	Seung Park Review/Request.
6/5/96		L.M.		Add DVC and RLC fields to FT input record and realign position of remaining fields.	Seung Park Review/Request.

Date	SPCR	Made By	Section	Change	Reason for Change
6/10/96		L.M.		Change Optional Displacement in FM input record to a length of 4, data type of 'I' and VR/EC of 0000-9999. Realign (change the positions) the following fields due to a length change: Displacement Units, and Fuel Usage.	See Requirements Specification SPCR 451 which states the problem and the correct solution.
6/13/96		L.M.		Change 'X' to 'R' for the Add and Replace Transaction for the following fields: F2-Transmission Type, F2-Drive System, F2-Transmission Overdrive, F2-Shift Indicator Light, F2-Engine Management System, F2-Number of Transmissions Modes, F2-Variable Lockup Point, F2-Declutching/Freewheeling, and FF-Sub-Configuration Sales field. Change 'Tranmission' to 'Transmission' in the F2-Number of Transmissions field.	6/12/96 Technical CCB Direction.
6/13/96		L.M.		Add the word 'Optional' to the Displacement and Displacement Units fields in the 'FM' input records.	6/12/96 Technical CCB Direction.
6/13/96		L.M.		Change the "*Note:* Default is 'Y'." to "*Note:* Default is 'N'." in the VR/EC F2-Shift Indicator Light field.	6/12/96 Technical CCB Direction.
6/13/96		L.M.		Add "*Note:* Default is 'N'." to the VR/EC for the following fields: F2-Engine Management System, F2-Number of Transmission Modes, F2-Declutching/Freewheeling, and the FF-Lockup Override field F2-Shift Indicator Light field. Add "*Note:* Default is '3'." to the VR/EC for the FF-Altitude Code field.	6/12/96 Technical CCB Direction.
6/20/96		L.M.		Delete 7 occurrences of Test Number field in 'FT' input record starting at position 30.	6/20/96 Technical concurrence with Seung Park.

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Car Line	
Version Number (SDC Doc Number): SDC-0055-078-LM-5015F	
Date: 5/7/96	**Author:** L. Miller
WP File Name: carline.rvf	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/15		L.M.		Delete 'For Modify: 'M'' from VR/EC in Process Code CS input record.	Modification of a Car Line State Restriction is not feasible.
3/15		L.M.		Change 'Process Code' in CS input record to 'State Restriction Process Code'.	Remove ambiguity in process code from C1, C2, and CS input record.
3/15/96		L.M.		Change HB Passenger Vol Position from '50-53' to '50-52'.	Position is incorrect for a length of 3.
5/7/96		L.M.		Change 'unless this CAR LINE CODE is carried over from a previous year' to 'for the VI Manufacturer Code and Division Code.'	SPCR 734 4.19/96
5/7/96		L.M.		Delete 'Sales VI-Manufacturer Code' and 'Sales Division Code' from C2 input record.	Teleconference direction from NVFEL.
5/7/96		L.M.		Change 'State Restriction Code 1' to 'State Restriction Code' and Delete State Restriction Codes 2, 3, 4 and 5.	Only one State Restriction Code should be permitted per input record. The CS input record would be inserted multiple times if multiple state restriction apply.

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CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Engine Systems Information	
Version Number (SDC Doc Number): SDC-0055-078-LM-5018B	
Date: 6/19/96	**Author:** L. Miller
WP File Name: esi.rvb	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/28/96		L.M.		Change Engine System Number VR/EC in E2 input record from '01-09' to '01-99'.	The Valid Range / Entry Criteria (VR/EC) was incorrectly specified as 01 to 09 rather than 01 to 99.
5/7/96		L.M.		Add '*Note:* Comment text is appended to the end of any existing comment text for Engine Family System' to VR/EC.	Clarify comment text with regard to its disposition.
5/7/96		L.M.		Change 'A through Z' to 'AA through ZZ'.	Change per SPCR 418.
5/7/96		L.M.		Add 'ET' input record to accept comment text for Engine Family Subsystem.	The 'EC' input record accepts comment text for the Engine Family System and the 'ET' input record accepts text for the Engine Family Subsystem.
5/7/96		L.M.		Change VR/EC for Additive DF from '0.000-9.999' to '-9.999999 - 9.999999', change length from 5(4,3) to 9(7,6) and realign position for Average Flag, Banking and Trading Indicator, Non-Compliance Penalty Flag and Waiver Flag.	Correct Additive DF VR/EC.
5/7/96		L.M.		Remove VR/EC Note for Additive DF field and add '*Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 0 when the value entered is less than 0.'	Clarification by NVFEL with regard to Additive DF.

Date	SPCR	Made By	Section	Change	Reason for Change
5/7/96		L.M.		Remove VR/EC Note for Multiplicative DF field and add '*Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 1 when the value entered is less than 1.'	Clarification by NVFEL with regard to Multiplicative DF.
6/7/96		L.M.		Change Position values '89-68' to '68-68' for Waiver Flag in EG input record.	Error in position assignment.
6/7/96		L.M.		Remove S - Spark C - Compression from VR/EC for Ignition Type in E1 input record.	Remove duplication as Otto is a spark ignited engine and Compression is a Diesel engine.
6/7/96		L.M.		Change 'X' to ' ' (blank) for the Modify and Replace transactions and add '*Note:* Field required on an Add Transaction if no Engine Family Systems exist for the Engine Family.' to the VR/EC for the following fields in the E1 input record : Combustion Cycle, Ignition Type, Fuel System, Valves per Cylinder, Turbocharger Supercharger, Catalyst, Trap, California OBD, Federal OBD.	SPCR 1318
6/7/96		L.M.		Duplicate Production Preconversion Code in the E1 input record. For the first instance delete the word Preconversion from the field name. For the second instance delete the work Production and change the position from 88-88 to 90-90. In both instances change 'X' to ' ' (blank) for the Modify and Replace transactions.	SPCR 1318

Date	SPCR	Made By	Section	Change	Reason for Change
6/14/96		L.M.		Remove O - Otto D - Diesel and add S - Spark C - Compression to VR/EC for Ignition Type in E1 input record.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Remove 'Count' from 'Trip Point Count' field in E1 input record.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change 'Initial Low Emission Vehicle' to 'Inherently Low Emission Vehicle' in VR/EC for 'EG' input record Tier field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change 'HC-SOLI' and 'CO-SOLI' to 'HC-STLI' and 'CO-STLI', correct spacing for '-Total Hydrocarbon', change 'HWY-HWY' to 'HWY-NOX', and remove MFR FE - Manufacturer-derived fuel economy EPA FE - EPA-calculated fuel economy FE - Official fuel economy F.E. FE-URND-UADJ - Unrounded unadjusted fuel Economy FE-URND-ADJ - Unrounded adjusted fuel economy FE-RND-UADJ - Rounded unadjusted fuel economy FE-RND-ADJ - Rounded adjusted fuel economy in VR/EC 'EG' input record Emission Name field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Delete "IT0 - ILEV Tier 0" and "IT1 - ILEV Tier 1" from the VR/EC in the 'EG' input record Tier Field.	6/12/96 Technical CCB Direction.

Date	SPCR	Made By	Section	Change	Reason for Change
6/14/96		L.M.		Delete 'California only - ' (2 occurrences) from the VR/EC in the 'EG' input record Tier Field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change 'Tier 1 Initial" to "Tier 1 Intermediate" in the VR/EC in the 'EG' input record Tier Field.	6/12/96 Technical CCB Direction.
6/19/96		L.M.		Delete "*Note:* Storage of the standard may be as an alphanumeric, however software must retain the number of significant digits; that is, using software must be able to determine the number of significant digits and right decimal places in the standard. For Federal high altitude and Federal low altitude subsystems, the program shall determine and assign default values by decoding the engine family name and obtaining the appropriate standards from the emission standards data base. The system shall support the entry of Federal emission standards by the user in addition to providing default values." and Add "*Note:* The system shall support the entry of emission standards by the user and may additionally provide default values if EPA has applicable standards. " to VR/EC for Emission Standard.	Clarification of VR/EC "*Notes*"(PA peer review).
6/19/96		L.M.		Delete "*Note:* For Federal high altitude and Federal low altitude subsystems, the program shall determine and assign default values by decoding the engine family name and obtaining the appropriate standards from the emission standards data base." from the VR/EC for Phase in Percentage.	Clarification of VR/EC "*Notes*"(PA peer review).

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Evaporative Systems Information	
Version Number (SDC Doc Number): SDC-0055-078-LM-5030B	
Date: 6/19/96	**Author:** L. Miller
WP File Name: evsi.rvb	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/28/96		L.M.		Change Field Process Code Valid Range / Entry Criteria (VR/EC) for PF and PM input records from 'For Replace: 'M'' to 'For Replace: 'R''.	The Valid Range / Entry Criteria (VR/EC) was incorrectly specified as 'M' for Replace when it should be 'R'.
3/28/96		L.M.		Move the specified transaction type identifier from the Modify transaction to the Replace transaction for the following fields in the PF input record: Input Record Type, Field Process Code, Canister Configuration Number, Canister Bottom, Canister Housing, and Purge.	Correct assignment of transaction type to reflect permitted transaction as indicated by the Field Process Code - the Replace Transaction is valid.
3/28/96		L.M.		Move the specified transaction type identifier from the Modify transaction to the Replace transaction for the following fields in the PM input record: Input Record Type, Field Process Code, Fuel Type, and Fuel Tank Material.	Correct assignment of transaction type to reflect permitted transaction as indicated by the Field Process Code - the Replace Transaction is valid.
5/7/96		L.M.		Remove 'R' from the Delete Transaction for the Input Record Type field and add 'Note: Comment text is appended to the end of any existing comment text for Evaporative Family System in the VR/EC for the Comment Field in the 'PC' Input Record.	Remove 'R' from Input Record Type field and update VR/EC text to reflect the append of comment text to Evaporative Family System entity.

Date	SPCR	Made By	Section	Change	Reason for Change
5/7/96		L.M.		Change VR/EC note from 'Defaults to derived Evaporative Family Model Year' to 'Defaults Model Year is derived from Evaporative Family Name.'	Clarify VR/EC note per SPCR 804.
5/7/96		L.M.		Add 'PT' input record to accept comment text for Evaporative Family Subsystem.	The 'PC' input record accepts comment text for the Evaporative Family System and the 'PT' input record accepts text for the Evaporative Family Subsystem.
5/7/96		L.M.		Remove 'Cert / In Use Code' field from PG input record and reassign positions for Tier, Emission Name, Emission Standard, Phase In Percentage, Multiplicative DF, and Additive DF fields.	Removed per teleconference of April 29, 1996.
5/7/96		L.M.		Add '(4,3)' to length for Multiplicative DF field.	Format specification missing for real value.
5/7/96		L.M.		Remove VR/EC Note for Additive DF field and add '*Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 0 when the value entered is less than 0.'	Clarification by NVFEL with regard to Additive DF.
5/7/96		L.M.		Remove VR/EC Note for Multiplicative DF field and add '*Note:* This field shall be stored in the database as entered by the user, however IOV CFEIS processes that use this field shall use the value 1 when the value entered is less than 1.'	Clarification by NVFEL with regard to Multiplicative DF.
6/7/96		L.M.		Remove Canister Capacity Measure from P1.	SPCR 1323 requested change.

Date	SPCR	Made By	Section	Change	Reason for Change
6/7/96		L.M.		Change 'X' to ' ' (blank) for the Modify and Replace transactions for Vapor Storage System and Combustion Cycle fields in the P1 input record. Remove Ignition Type from the P1 input record. Add the following to the VR/EC for Vapor Storage System and Combustion Cycle: '*Note:* Field required on an Add Transaction if no Evaporative Family Systems exist for the Evaporative Family.'	SPCR 1327.
6/14/96		L.M.		Add "*Note:* Default is '2'." to VR/EC in P1 input record Fuel Induction Indicator Code field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Add "(2 Hour)" to Existing and "(2 Day + 3 Day)" to Enhanced in the VR/EC 'PS' input record Evaporative Standard field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change 'HWY-HWY' to HWY-NOX' and delete MFR FE - Manufacturer-derived fuel economy EPA FE - EPA-calculated fuel economy FE - Official fuel economy F.E. FE-URND-UADJ - Unrounded unadjusted fuel Economy FE-URND-ADJ - Unrounded adjusted fuel economy FE-RND-UADJ - Rounded unadjusted fuel economy FE-RND-ADJ - Rounded adjusted fuel economy in the 'PG' input record Emission Name field.	6/12/96 Technical CCB Direction.

Date	SPCR	Made By	Section	Change	Reason for Change
6/14/96		L.M.		Remove Combustion Cycle Field from the 'P1' input record.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Remove Tier Field from the 'PG' input record.	6/12/96 Technical CCB Direction. Note this field will remain in the IEF model and database and will be derived from the Evaporative Standard Field.
6/19/96		L.M.		Delete "*Note:* Storage of the standard may be as an alphanumeric, however software must retain the number of significant digits; that is, using software must be able to determine the number of significant digits and right decimal places in the standard. For Federal high altitude and Federal low altitude subsystems, the program shall determine and assign default values by decoding the engine family name and obtaining the appropriate standards from the emission standards data base. The system shall support the entry of Federal emission standards by the user in addition to providing default values." and Add "*Note:* The system shall support the entry of emission standards by the user and may additionally provide default values if EPA has applicable standards. " to VR/EC for Emission Standard.	Clarification of VR/EC "*Notes*"(PA peer review).
6/19/96		L.M.		Delete "*Note:* For Federal high altitude and Federal low altitude subsystems, the program shall determine and assign default values by decoding the engine family name and obtaining the appropriate standards from the emission standards data base." from the VR/EC for Phase in Percentage.	Clarification of VR/EC "*Notes*"(PA peer review).

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - General Label	
Version Number (SDC Doc Number): SDC-0055-078-LM-5022C	
Date: 6/20/96	**Author:** L. Miller
WP File Name: gl.rvc	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/15/96		L.M.		Change 'X' to 'R' in the Add Transaction and the Replace Transaction in the 'G1' input record for the following fields: Cubic Inch Displacement, Number of Cylinders, Combustion Cycle, Fuel Injection, Number of Venturi, Catalyst, Feedback Fuel System, Variable Displacement, Turbocharged, Supercharged, and Engine Block Descriptors.	These fields are the key fields need to identify the Basic Engine and General Label Basic Engine and are therefore required fields.
3/15/96		L.M.		Delete 'R' in the Delete and Reprocess Transaction in the 'GM' record for the following fields: Input Record type, Division Code, and Car Line Code.	Deletion is from the Basic Engine and the associated entities. Therefore all related General Label information is deleted rather than a selective Car Line delete within General Label.
5/14/96		L.M.		Add "*Note:* Default is two weeks from submission date." for Release Date in VR/EC.	Add default for Release Date per SPCR 688.

Date	SPCR	Made By	Section	Change	Reason for Change
5/16/96		L.M.		Delete IWT field and Replace with Transmission Class field of length 3. Renumber position due to length change for fields: Transmission Type, Drive System, Transmission Overdrive, Shift Indicator Light, Engine Management System, Number of Transmission Modes, Variable Lockup Point and Declutching/Freewheeling. Add '001-999 Linkage field to 'GM' and 'GF' input records.' for Transmission Class VR/EC.	Remove IWT and add Transmission Class entry which serves as a linkage field between the 'G2' input record and the 'GM' and 'GF' input records per NVFEL direction.
5/16/96		L.M.		Insert Transmission Class field with 'R' for Add and Replace Transactions, with position '10-12', with a length of 3, with data type 'A' and a VR/EC of "001-999 Linkage field to 'G2' and 'GF' input records." after Car Line Code in the 'GM' input record and realign fields: Guzzler Exempt, Optional Displacement, Optional Displacement Code, Unrounded Unadjusted City FE, Unrounded Unadjusted Hwy FE, Unrounded Unadjusted Comb FE, Rounded Adjusted City FE, Rounded Adjusted Hwy FE, Rounded Adjusted Comb FE, Annual Fuel Cost, Approval Date, New Label Indicator, Fuel Usage, and Sales Data Suppression Code.	Add Transmission Class field which serves as a linkage field between the 'G2' input record and the 'GM' and 'GF' input records per NVFEL direction.
5/16/96		L.M.		Add Division Code, Car Line Code, Transmission Class after 'GF' Input Record Type field. Add the Transmission Configuration field after the 'DVC' field. Assign 'R' to Add and Replace Transaction for each input field. Assign new positions and use 'GM' VR/EC entry for the Division Code, Car Line Code and Transmission Class fields. Add '01-99 Linkage field to 'GR' and 'GL' input records.' for the VR/EC for the Transmission Configuration field.	Add Division Code, Car Line Code, Transmission Class fields to 'GF' input records per NVFEL direction.

Date	SPCR	Made By	Section	Change	Reason for Change
5/16/96		L.M.		Move Engine Code and place it after Axle Ratio and move Lockup Override and place it after RLHP.	NVFEL had requested a certain ordering of the GF input fields. This field was moved to accommodate this ordering.
5/16/96		L.M.		Reassign position for all 'GF' input fields.	NVFEL had requested a certain ordering of the GF input fields. All fields positions need reassigned due to the insertion and movement of fields.
5/22/96		L.M.		Add Manufacturer Code to 'GM' and 'GF' input record and realign position fields for remaining fields in those input records.	Manufacturer must be identified for model and subconfiguration.
5/22/96		L.M.		Add Transmission Configuration to GR and GL input records with 'R" for Add and Replace Transactions after Input Record Type and reorder remaining fields.	Add Transmission Configuration to GR and GL input records per NVFEL direction.
6/5/96		L.M.		Add "*Note:* Default is '00'." to VR/EC for Number of Venturi field.	Seung Park Review/Request.
6/5/96		L.M.		Add "*Note:* Default is 'Blank'." to VR/EC for Engine Block Descriptors field.	Seung Park Review/Request.
6/5/96		L.M.		Add DVC and RLC fields to GT input record and realign position of remaining fields.	Seung Park Review/Request.
6/10/95		L.M.		Change Optional Displacement in GM input record to a length of 4, data type of 'I' and VR/EC of 0000-9999. Realign (change the positions) the following fields due to a length change: Optional Displacement Code, Unrounded Unadjusted City FE, Unrounded Unadjusted Hwy FE, Unrounded Unadjusted Comb FE, Rounded Adjusted City FE, Rounded Adjusted Hwy FE, rounded Adjusted Comb FE, Annual Fuel Cost, Approval Date, New Label Indicator, Fuel Usage and Sales Data Suppression Code.	See Requirements Specification SPCR 451 which states the problem and the correct solution.

Date	SPCR	Made By	Section	Change	Reason for Change
6/13/96		L.M.		Add '*Note:* Default is 'N'.' to the VR/EC for the following fields: G2-Shift Indicator Light, G2-Engine Management System, G2-Number of Transmission Modes, G2-Declutching/Freewheeling, GF-Lockup Override.	6/12/96 Technical CCB direction.
6/13/96		L.M.		Add '*Note:* Default is '3'.' to the VR/EC for GF-Altitude Code.	6/12/96 Technical CCB direction.
6/13/96		L.M.		Change 'X' to 'R' for the Add and Replace Transaction for the Sub-Configuration Sales field in the GF input record.	6/12/96 Technical CCB direction.
6/20/96		L.M.		Delete 7 occurrences of Test Number field in 'GT' input record starting at position 30.	6/20/96 Technical concurrence with Seung Park.

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Manufacturer Test Data System	
Version Number (SDC Doc Number): SDC-0055-078-LM-5019B	
Date: 6/14/96	**Author:** L. Miller
WP File Name: mtds.rvb	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/18/96		L.M.		Cut hidden text from VR/EC for cells in Unrounded Emission Result Name and paste into the subsequent row for Unrounded Emission Result Name.	Unrounded Emission Result Name consist of 3 rows with the VR/EC cell containing hidden text. Cut the last VR/EC element in the cell so that the hidden text is captured. Paste the captured information into the next row and the previously hidden text will now be viewable. Continue this process in all subsequent rows to show all readable VR/EC text.
4/4/96		L.M.		Change Net Heating Value upper range for Gasoline in VR/EC from '018700' to '019000'. Two changes are required. The first is Gasoline - NHV and Gasoline (dual fuel), and the second is Gasoline (NHV) and Gasoline California Phase II.	SPCR 656 directed technical change from Richard Parson via E-mail.
4/4/96		L.M.		Add 'A-Z' to Average Code VR/EC and change data type from 'I' to 'A'.	SPCR 348 - Average Code change per March 4, 1996 Teleconference Call (item number 6). Technical Direction guidance provided.
4/15/96		L.M.		Insert the word 'EPA' between the words 'valid test' in the VR/EC Note for field name Test Number.	Change per SPCR number 849 to more clearly note that the EPA would supply a test number in an Add Transaction.
4/15/96		L.M.		Remove '*Note:* The ID entered must be linked to the MANUFACTURER CODE entered.' from Manufacturer Code VR/EC.	Remove per SPCR 703

Date	SPCR	Made By	Section	Change	Reason for Change
6/11/96		L.M.		Change VR/EC in Fuel Net Heating Value for Diesel fuel from '018300-01808' to '018300-019100'.	High range for Diesel fuel is incorrect - update with correct value.
6/14/96		L.M.		Add "*Note:* Applies only to durability tests." to VR/EC for 'T1' input record Calculate Deterioration Factors field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change "#3" to "#2" in VR/EC in 'T2' input record VI Fuel Type Field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change "No entry needed for Cold Co, Light Truck Idle CO or Short Test" to "Applies only to durability tests." in VR/EC in 'T3' input record Average Code Field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Add "NOx Humidity Correction Factor" to the VR/EC 'T3' input record NOx KH field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change the length of the Test Group Code in the 'T3' input record from 6 to 7 and realign the following fields: Quick Check, Wait Time, Warm Up, Restarts, and Precondition Type.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change "No entry needed for Evaporative, Light Truck Idle CO or Short Tests" to "Enter Coastdown Time (seconds)." in the VR/EC 'T3' input record Quick Check field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Add "*Note:* Not required for Diesel." to VR/EC in the 'T4' input record fields: Fuel Batch Effective Date, Fuel Batch Ineffective Date, and fuel Batch Calibration Date.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Delete all "Valid T3 Input Records" shown as an example starting at page 16.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Change "HWY-HWY" to "HWY-NOX" in the VR/EC of the 'TR' input record Unrounded Emission Result Name field.	6/12/96 Technical CCB Direction.

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Shift Schedule	
Version Number (SDC Doc Number): SDC-0055-078-LM-5016B	
Date: 6/18/96	**Author:** L. Miller
WP File Name: shftschd.rv1	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
5/7/96		L.M.		Change 'X' to 'R' for Shift Point Number Modify Transaction.	This is a required field for a Modify Transaction.
5/7/96		L.M.		Change 'X' to 'R" for the Add Transaction for Cruise Declutch Speed (S4 input record).	Change optional fields to required for Cruise Declutch Speed.
5/7/96		L.M.		Change 'X' to 'R" for the Replace Transaction for the following fields: Non-Cruise Declutch Speed (S3), Non-Cruise 1-2 Gear SS (S3), Cruise Declutch Speed (S4), and Cruise 1-2 Gear SS (S4)	Change optional fields to required for specified fields.
6/18/96		L.M.		Add 'Shift Point H/V Indicator', 'Shift Point L/R Indicator', and 'Cruise Point' to 'SP' input record at position 33, 35 and 38 respectively with a length of 1 and a data type of 'A'. Provide relevant VR/EC information. Change position of Exception Point field in SP input record from '36-36' to '37'-37'.	LNS/TSD interface requirements.
6/18/96		L.M.		Add 'LNS Severity Code' to 'S2' input record at position 21 of length 1 and data type I. VR/EC is 0-5	LNS/TSD interface requirements.

Date	SPCR	Made By	Section	Change	Reason for Change
6/18/96		L.M.		Add 'S5' and 'S6' input record layouts for Mean Calculated Non-Cruise Declutch Speed, Minimum Calculated Non-Cruise Declutch Speed, Mean Calculated Cruise Declutch Speed, and Minimum Calculated Cruise Speed fields per gear shift change (1-2, 2-3 ... etc).	LNS/TSD interface requirements.

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Summary Sheet	
Version Number (SDC Doc Number): SDC-0055-078-LM-5021B	
Date: 6/20/96	**Author:** L. Miller
WP File Name: summsht.rvb	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/22/96		L.M.		Change 'Summary Sheet Index Number' to Summary Sheet Index Id', change length from '7' to '9', change position from '25-31' to '25-33', and change VR/EC from 'Valid SUMMARY SHEET INDEX NUMBER' to 'Valid SUMMARY SHEET INDEX Id'. Correct position values due to Summary Sheet Index length change for the following fields in the X1 input record: Summary Sheet Version Number, Evaporative Family Name, Evaporative System Number, and Vehicle Type Indicator Code.	Summary Sheet Index is 9 digits in length not 7 and it is not a number but an identifier. Correct to reflect the proper length and a more descriptive field name. Correct all position assignments for remaining fields in X1 input record
5/15/96		L.M.		Add 'R' to Input Record Type for Reprocess Transaction and change 'X' to 'R' for Add, and Replace Transactions.	Input Record Type was missing for the Reprocess Transaction and is required for the Input Record Type to identify it as the 'XC' input record.
5/23/96		L.M.		Change field name 'Summary Sheet Index Id' to 'Summary Sheet Index Number' and change the VR/EC from 'Id' to 'Number'.	Summary Sheet Index Number has been used in the past and is the more descriptive term.
5/22/96		L.M.		Change 'R' to 'X' for the Shift Indicator Light Code field in the Add Transaction.	Change per SPCR 798 - SIL is not a required field.
5/22/96		L.M.		Change 'R' to 'X' for the Number of Transmission Modes Code field in the Add Transaction.	Change per SPCR 799 - Number of Transmission Modes Code is not a required field.

Date	SPCR	Made By	Section	Change	Reason for Change
5/22/96		L.M.		Change 'R' to 'X' for the Declutching/Freewheeling field in the Add Transaction.	Change per SPCR 800 - Declutching / Freewheeling is not a required field.
5/29/96		L.M.		Change VR/EC to R - Rear-wheel Drive F - Front-wheel Drive 4 - 4-wheel Drive	Change per SPCR 796 - valid codes for rear, front and 4-wheel drive codes.
6/14/96		L.M.		Add Manufacturer Code before Division Code in X2 input record and realign positions for the following fields: Division Code, Car Line Code, Sales Area Code, Transmission Type, Drive System Code, Transmission Overdrive Code, Shift Indicator Light Code, Number of Transmission Modes Code, Variable Lockup Point Code and Declutching/Freewheeling.	6/12/96 Technical CCB Direction.
6/18/96		L.M.		Change 'R' to 'X' for the Add, Replace, Delete, and Reprocess Transaction for the Evaporative Family Name field in the 'X1' input record. Change the VR/EC for the Evaporative System Number in the 'X1' input record to read '*Note:* Defaults to '01' if Evaporative Family Name has been entered.'	Indirect change from Vehicle Configuration due to diesel not requiring an Evaporative Family Name - 6/12/96 Technical CCB Direction
6/20/96		L.M.		Delete 9 occurrences of Test Number field in 'XT' input record starting at position 12.	6/20/96 Technical concurrence with Seung Park.

CFEIS Document Change Summary

Document Name: CFEIS Input Record Layout - Vehicle Information	
Version Number (SDC Doc Number): SDC-0055-078-LM-5020B	
Date: 6/14/96	**Author:** L. Miller
WP File Name: vi.rvb	**WP File Location:** f:\user\lamiller\work

Date	SPCR	Made By	Section	Change	Reason for Change
3/18/96		L.M.		Change VI Comments Position from '1-79' to '3-80'.	Conflicting range.
4/4/96		L.M.		Change position for Displacement from '27-35' to '27-34' and realign subsequent positions for the following fields: DISP/BORE/STROKE Units, Bore, Stroke, Rated Horsepower, Engine Type Code, Number of Cylinders, Number of Valves per Cylinder, Compression Ratio, Ignition Timing #1, Ignition Timing #1 Before/After Code, Ignition Timing RPM, and Ignition Timing RPM Tolerance.	Correct position length error and realign the fields that follow the Displacement field.
4/5/96		L.M.		Change Total Number of Canisters length from '3' to '2' and position from '35-37' to '35-36' and realign subsequent positions for the following fields: Alternate Canister Loading Rate For The 3-Diurnal Test, Catalyst Preheating Method Code.	SPCR noted VES_CNT is number (2) and the length of the field - Total Number of Canisters is 3. Note the VR/EC is correctly specified from 00-99.
5/29/96		L.M.		Change Catalyst Preheating Method Code data type from 'A' to 'I', length from 2 to 1 and change position from 44-45 to 44-44.	Apply changes per SPCR 1209.
5/29/96		L.M.		Change Dynamometer Equation Type Code VR/EC to include text values 'A' or 'B'.	Apply changes per SPCR 1206.

Date	SPCR	Made By	Section	Change	Reason for Change
5/30/96		L.M.		Change Drive Code VR/EC from 1 - Rear-wheel Drive 2 - Front-wheel Drive 3 - 4-wheel Drive to 1 - Rear Drive, Left-hand Steering 2 - Rear Drive. Right-hand Steering 3 - Front Drive, Left-hand Steering 4 - Front Drive, Right-hand Steering 5 - 4-Wheel Drive, Left-hand Steering 6 - 4-Wheel Drive, Right-hand Steering	SPCR 787 requested changes.
6/4/96		L.M.		Delete Bore and Stroke from V2 and realign positions for Rated Horsepower, Engine Type Code, Number of Cylinders, Number of Valves per Cylinder, Compression Ratio, Ignition Timing #1, Ignition Timing #1 Before/After Code, Ignition Timing RPM, Ignition Timing RPM Tolerance.	SPCR 1288 requested changes.
6/7/96		L.M.		Replace "DISP / BORE / STROKE Units" Field Name with "Displacement Units".	SPCR 1288 requested changes
6/7/96		L.M.		Replace VR/EC values 0 - No side fan 1 - Side fan on city test only 2 - Side fan on highway test only 3 - Side fan on city and highway tests" in Side Fan Cooling Code with Y - Yes, equipped with side fan N - No, not equipped with side fan	SPCR 1168 requested change.
6/7/96		L.M.		Add the following to the VR/EC for field Vehicle Purpose in the V1 input record: '*Note:* The Change Transaction is not allowed for '02' - Cert Durability Data Vehicles.'	SPCR 1322 requested change.

Date	SPCR	Made By	Section	Change	Reason for Change
6/10/96		L.M.		Change Displacement Field length from 8(7,3) to 7(6,1) and change VR/EC from '0000.000 ≤ DISPL ≤ 8193.500' to '00000.0 ≤ DISPL ≤ 08193.5', and realign position for the following fields: Displacement Units, Rated Horsepower, Engine Type Code, Number of Cylinders, Number of Valves per Cylinder, Compression Ratio, Ignition Timing #1, Ignition Timing #1 Before/After Code, Ignition Timing RPM, and Ignition Timing RPM Tolerance.	SPCR 666.
6/14/96		L.M.		Add "0-200" to 'V2' input record Ignition Timing RPM Tolerance field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Add "0-10" to 'V3' input record Ignition Timing Degree Tolerance.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Delete 'Crankcase System Code' in the 'V3' input record and realign the following remaining fields: Engine Family Name, Engine System Number, Emission Control System - Exhaust (4 occurrences), Emission Control System - Evaporative.	6/13/96 Seung Park and Ken Farris agreement.
6/14/96		L.M.		Add "*Note 1:* Not Required for 'Diesel'." to the VR/EC for the 'V4' input record Evaporative System Number field.	6/12/96 Technical CCB Direction.
6/14/96		L.M.		Delete 'R' for the Carry Over Transaction in the 'VP' input record for the following fields: Input Record Type, Evaporative System Information Process Code, and the Evaporative Emission Code. Delete "For *Carry Over*: 'C' " from the 'VP' input record VR/EC for the Evaporative System Information Process Code.	SPCR 1368.

Date	SPCR	Made By	Section	Change	Reason for Change
6/14/96		L.M.		Change "Dynamometer Track Coefficient" to "Electric Dynamometer Target Coefficient" (3 occurrences) and add "Set" to "Electric Dynamometer Coefficient" (3 occurrences) in the 'VT' input record.	SPCR 1368.