```
        *================================================
        * ASDZ/16139577 (Rel 2/2/89)
        * Rev  2/10/99
        *
        * $42 ECM P/N 127747
        *
        * 89 - 90  5.7l C1, C2, C3, K1, K2, R1, V1 & G2, G3 CALIF TRUCK
        *
        * LO5, MD8, NB2, GU4, GU6 GT4 & GT5
        *
        *   GU2 = 2.73:1
        *   GU4 = 3.08:1
        *   GU6 = 3.42:1
        *   GT4 = 3.73:1 <- MINE
        *   GT5 = 4.10:1
        *
        * REV 3/21/94
        * ------------------------------
        *
        *   L0002   ; Status
        *
        *   b7 1 =
        *   b6 1 =
        *   b5 1 = CLOSED LOOP
        *   b4 1 = LT 800 mvdc
        *
        *   b3 1 = LT @ VDC
        *   b2 1 = GT 3 VDC
        *   b1 1 =
        *   b0 1 =
        *
        * ------------------------------
        *   L0008   ; Status
        *
        *   b7 1 =
        *   b6 1 =
        *   b5 1 =
        *   b4 1 =
        *
        *   b3 1 = FUEL CUT OFF
        *   b2 1 =
        *   b1 1 = BLM Enable
        *   b0 1 =
        *================================================
                    ;
LD000:  FDB $7FD9   ; CK SUM
LD002:  FDB $251D   ; EPROM ID NUMBER
                    ;
LD004:  FCB $42     ; CK BYTE
                    ;
                    ;-------------------------------------
LD005:  FCB $88     ; Opt Word, 1000 1000
                    ;
                    ;   B7 = 1 = ERG 1 Pass diag
                    ;   B6 = 1 = Not used
                    ;   B5 = 1 = Not used
                    ;   B4 = 1 = EGR INVERSE D.C.
                    ;
                    ;   B3 = 1 = EGR DC PRR Opt 1 = 32 Hz (BP)
                    ;                           0 = 128 Hz (EVRV)
                    ;   B2 = 1 = Not used
                    ;   B1 = 1 = GRID data opt
                    ;   B0 = 1 = Not used
                    ;
                    ;-------------------------------------
LD006:  FCB $D0     ; Opt Word, 1101 0000
```

```
                    ;
                    ;   b7 = 1 = SEL Diff TPS opt for Acell Enr
                    ;   b6 = 1 = NO ENABLE MOTOR R/S DUE TO RESTART
                    ;   b5 = 1 = DO INT R/S ON BLM CELL CHANGE
                    ;   b4 = 1 = DO INT R/S ON ACCEL ENR
                    ;
                    ;   b3 = 1 = OPN LP DECELL AFR OPT
                    ;   b2 = 1 = Not used
                    ;   b1 = 1 = TCC LD LMT
                    ;               1 = RPM
                    ;               0 = MPH
                    ;
                    ;   b0 = 1 = BURST KNK opt ON
                    ;
                    ;--------------------------------------
LD007:  FCB $24     ; OPT WORD, 0010 0100
                    ;
                    ;   b7  = 1 = SHFT LIGHT/TCC
                    ;               LIGHT   = 1
                    ;               TCC     = 0
                    ;
                    ;   b6  = 1 = Not used
                    ;   b5  = 1 =  HI GER SW POL
                    ;               1 = HI SIG
                    ;               0 = LO SIG
                    ;
                    ;   b4  = 1 = Not used
                    ;
                    ;   b3  = 1 =
                    ;   b2  = 1 = Decell Fuel Cut Off TCC UNLOCK
                    ;   b1  = 1 = TEST HI GR IN HIWAY MODE SPK
                    ;   b0  = 1 = Not used
                    ;--------------------------------------
LD008   FCB 0       ; COLD START THROTLE KICKER ENABLE
                    ; $00 = DISABLE
                    ; $40 = SELECTED, NORMAL OUTPUT MODE
                    ; $44 = SELECTED, INVERTED OUTPUT MODE
                    ;--------------------------------
LD009   FCB 0       ; SA INIT, (256/90)
                    ;
LD00A   FDB 2185    ; ENG START UP RPM DRP PERIODS, (499 RPM)
                    ; VAL = N * 65536 * (120/N CYL)
                    ;--------------------------------
LD00C:  FCB 168     ; MAIN SPK HI EXTEND B.P. RPM/25  (4200 RPM)
                    ; MAX RPM FOR CALCULATED SPARK ADVANCE
                    ;
LD00D   FCB  46     ; DEG/1K RPM SLOPE (5 DEG/1K RPM)
                    ; VAL = N * 65536/7200 (9.1)
                    ; USED TILL RPM G.T. LD00C
                    ;--------------------------------
LD00E:  FCB 240     ; NORMAL MAP FILTER COEF
LD00F:  FCB 240     ; TRANSIENT MAP FILT COEF
                    ;
LD010:  FCB 40      ; TRANSIENT MAP COEF APPLY TIME, SEC/80
LD011:  FCB 2       ; DIFF TPS FOR MAP FILT COEF
LD012:  FCB 3       ; DIFF RPM TRANS MAP COEF (75 RPM)
LD013:  FCB 0       ; MPH THRESH FOR MAP FILT COEF
                    ;
LD014:  FCB 28      ; Main SA BIAS, (10 Deg)            <*****
LD015:  FCB 57      ; COOL SA BIAS, (20 Deg)
                    ;
LD016   FCB 8       ; NUM CYL'S,
                    ; (MAY BE 3,4,6 or 8)
                    ;
LD017   FCB 4       ; ENG RUN TIME OUT PARAM, DRP'S
LD018   FCB 40      ; ENG OFF TIME, (4 SEC'S)
```

```
                    ;
LD019:  FDB 0119    ; MAX SA, 41 DEG
                    ; 256/90
                    ;---------------------------------
LD01B:  FDB 65508   ; MAX RETARD (9.4 Deg)
                    ;
                    ;                    Max SA      Max Retard
                    ; 8 cyl big cap max = 42         4
                    ; 6 cyl big cap max = 54        14
                    ; 6 cyl sml cap max = 40         9
                    ;---------------------------------
LD01D:  FCB 10      ; START UP SA COEF
                    ; Filts SA from 0 at start
                    ;
LD01E:  FCB 240     ; RPM FILTER CONSTANT
                    ;
LD01F:  FCB 192     ; RPM limit for Pseudo Baro read in WOT
                    ;
LD020:  FCB 166     ; TPS Thresh for BARO calc
LD021:  FCB 5       ; Max Diff TPS for Baro calc,
LD022:  FCB 128     ; Baro A/D value filer, (coef 50%)
                    ;
LD023:  FCB 23      ; SA Diff for ALDL (8 Deg ?

        ;
        ; HIWAY SPARK ADDER QUAL'S
        ; QUALS FOR SPK ADDER TBL LD157
        ;
LD024:  FCB 96      ; 3 MPH, HWAY SPK ADV QUAL Thresh MPH, MIN
                    ; VAL = MPH * 3.2
                    ;
LD025:  FCB 40      ; 40 SEC'S HWAY SPK ADV QUAL MIN TIME Thresh (SEC/1)



LD026:  FCB 9       ; 2 SEC'S, SPK Time out reduce, (Sec * 5)-1))
LD027:  FCB 40      ; 40 SEC'S, PWR ENR SPK TIME OUT
                    ;
LD028:  FCB 112     ; 2800 RPM, MIN RPM FOR SPK SA DECAY
                    ;
LD029:  FCB 39      ; Pwr Enr SPK Decay cool THRESH
LD02A:  FCB 2       ; Pwr Enr SK ADV INCREASE, Deg, 1.4 Deg


        ;------------------------
        ; KNOCK PARAMS
        ;------------------------
LD02B   FCB 2           ; 2 MPH, Cut off for RETARD Increase
LD02C   FCB 56          ; 700 RPM, Cut off for RETARD Increase
LD02D   FCB 131         ; 48c KNOCK COOL Cut off,
        ;------------------------
        ; BURST KNOCK RETARD QUALS
        ;------------------------
LD02E:  FCB 64          ; MAP Threshold, 40 Kpa
LD02F:  FCB 51          ; TPS Threshold, 19.9% TPS
LD030:  FCB 5           ; Diff TPS, 2%
LD031:  FCB 0           ; 0 Sec's, Duration of RETARD, Sec * 80
        ;-----------------------


        ******************************************
        * MAIN SA TABLE, (14x15)
        *
        * ECM 1227747 SA table ASDZ
        *
        *  FOR  8  CYL ENGINE
```

```
        *  CK BYTE $42        GM CK SUM $7FD9
        *
        *  VAL = SPK ADV + BIAS * (256/90)
        ****************************************
        ORG  $0032  ;
LD032:              ;
        FCB  0      ; Min RPM Val
        FCB  32     ; Min MAP Value
        FCB  15     ; MAP bp's each RPM
                    ;
        ;---------------------------------------
        ; 400 RPM
        ;           DEG Spk         Kpa MAP
        ;---------------------------------------
        FCB    73 ;   16                 30
        FCB    73 ;   16                 35
        FCB    73 ;   16                 40
        FCB    73 ;   16                 45
        FCB    73 ;   16                 50
        FCB    68 ;   14                 55
        FCB    62 ;   12                 60
        FCB    54 ;    9                 65
        FCB    45 ;    6                 70
        FCB    39 ;    4                 75
        FCB    34 ;    2                 80
        FCB    28 ;    0                 85
        FCB    22 ;   -2                 90
        FCB    19 ;   -3                 95
        FCB    17 ;   -4                100
        ;---------------------------------------
        ; 600 RPM
        ;           DEG Spk         Kpa MAP
        ;---------------------------------------
        FCB    73 ;   16 DEG SA          30
        FCB    73 ;   16                 35
        FCB    73 ;   16                 40
        FCB    73 ;   16                 45
        FCB    73 ;   16                 50
        FCB    68 ;   14                 55
        FCB    62 ;   12                 60
        FCB    54 ;    9                 65
        FCB    45 ;    6                 70
        FCB    39 ;    4                 75
        FCB    34 ;    2                 80
        FCB    28 ;    0                 85
        FCB    28 ;    0                 90
        FCB    28 ;    0                 95
        FCB    28 ;    0                100
        ;---------------------------------------
        ; 800 RPM
        ;        DEG Spk            Kpa MAP
        ;---------------------------------------
        FCB    73 ;   16 DEG SA          30
        FCB    73 ;   16                 35
        FCB    73 ;   16                 40
        FCB    73 ;   16                 45
        FCB    73 ;   16                 50
        FCB    68 ;   14                 55
        FCB    62 ;   12                 60
        FCB    54 ;    9                 65
        FCB    48 ;    7                 70
        FCB    39 ;    4                 75
        FCB    34 ;    2                 80
        FCB    31 ;    1                 85
        FCB    28 ;    0                 90
        FCB    28 ;    0                 95
```

```
FCB    28 ;    0                100
  ;-------------------------------------
  ; 1000 RPM
  ;      DEG Spk             Kpa MAP
  ;-------------------------------------
FCB    82 ;   19 DEG SA          30
FCB    79 ;   18                 35
FCB    79 ;   18                 40
FCB    79 ;   18                 45
FCB    73 ;   16                 50
FCB    68 ;   14                 55
FCB    62 ;   12                 60
FCB    54 ;    9                 65
FCB    48 ;    7                 70
FCB    39 ;    4                 75
FCB    34 ;    2                 80
FCB    31 ;    1                 85
FCB    28 ;    0                 90
FCB    25 ;   -1                 95
FCB    25 ;   -1                100
;-------------------------------------
; 1200 RPM
;        DEG Spk             Kpa MAP
;-------------------------------------
FCB    88 ;   21 DEG SA          30
FCB    85 ;   20                 35
FCB    73 ;   16                 40
FCB    71 ;   15                 45
FCB    68 ;   14                 50
FCB    62 ;   12                 55
FCB    56 ;   10                 60
FCB    56 ;   10                 65
FCB    54 ;    9                 70
FCB    48 ;    7                 75
FCB    42 ;    5                 80
FCB    42 ;    5                 85
FCB    39 ;    4                 90
FCB    34 ;    2                 95
FCB    34 ;    2                100
;-------------------------------------
; 1400 RPM
;        DEG Spk             Kpa MAP
;-------------------------------------
FCB    93 ;   23 DEG SA          30
FCB    88 ;   21                 35
FCB    76 ;   17                 40
FCB    73 ;   16                 45
FCB    68 ;   14                 50
FCB    62 ;   12                 55
FCB    56 ;   10                 60
FCB    62 ;   12                 65
FCB    59 ;   11                 70
FCB    51 ;    8                 75
FCB    48 ;    7                 80
FCB    48 ;    7                 85
FCB    42 ;    5                 90
FCB    36 ;    3                 95
FCB    36 ;    3                100
;-------------------------------------
; 1600 RPM
;        DEG Spk             Kpa MAP
;-------------------------------------
FCB    96 ;   24 DEG SA          30
FCB    91 ;   22                 35
FCB    79 ;   18                 40
FCB    76 ;   17                 45
```

```
FCB    71 ;   15                50
FCB    65 ;   13                55
FCB    59 ;   11                60
FCB    68 ;   14                65
FCB    68 ;   14                70
FCB    59 ;   11                75
FCB    56 ;   10                80
FCB    54 ;    9                85
FCB    48 ;    7                90
FCB    42 ;    5                95
FCB    39 ;    4               100
;---------------------------------------
; 1800 RPM
;        DEG Spk            Kpa MAP
;---------------------------------------
FCB    99 ;   25 DEG SA         30
FCB    93 ;   23                35
FCB    88 ;   21                40
FCB    82 ;   19                45
FCB    76 ;   17                50
FCB    73 ;   16                55
FCB    68 ;   14                60
FCB    68 ;   14                65
FCB    62 ;   12                70
FCB    62 ;   12                75
FCB    56 ;   10                80
FCB    56 ;   10                85
FCB    54 ;    9                90
FCB    48 ;    7                95
FCB    45 ;    6               100
;---------------------------------------
; 2000 RPM
;        DEG Spk            Kpa MAP
;---------------------------------------
FCB   102 ;   26 DEG SA         30
FCB    96 ;   24                35
FCB    91 ;   22                40
FCB    85 ;   20                45
FCB    79 ;   18                50
FCB    76 ;   17                55
FCB    73 ;   16                60
FCB    68 ;   14                65
FCB    68 ;   14                70
FCB    65 ;   13                75
FCB    56 ;   10                80
FCB    56 ;   10                85
FCB    54 ;    9                90
FCB    45 ;    6                95
FCB    42 ;    5               100
;---------------------------------------
; 2200 RPM
;           DEG Spk         Kpa MAP
;---------------------------------------
FCB   102 ;   26 DEG SA         30
FCB    96 ;   24                35
FCB    91 ;   22                40
FCB    85 ;   20                45
FCB    79 ;   18                50
FCB    76 ;   17                55
FCB    73 ;   16                60
FCB    68 ;   14                65
FCB    68 ;   14                70
FCB    68 ;   14                75
FCB    59 ;   11                80
FCB    59 ;   11                85
FCB    54 ;    9                90
```

```
FCB    51 ;    8                95
FCB    48 ;    7               100
;--------------------------------------
; 2400 RPM
;           DEG Spk         Kpa MAP
;--------------------------------------
FCB   105 ;   27 DEG SA          30
FCB    99 ;   25                 35
FCB    93 ;   23                 40
FCB    88 ;   21                 45
FCB    82 ;   19                 50
FCB    79 ;   18                 55
FCB    76 ;   17                 60
FCB    73 ;   16                 65
FCB    73 ;   16                 70
FCB    73 ;   16                 75
FCB    73 ;   16                 80
FCB    62 ;   12                 85
FCB    54 ;    9                90
FCB    51 ;    8                95
FCB    51 ;    8               100
;--------------------------------------
; 2800 RPM
;           DEG Spk         Kpa MAP
;--------------------------------------
FCB   108 ;   28 DEG SA          30
FCB   102 ;   26                 35
FCB    96 ;   24                 40
FCB    91 ;   22                 45
FCB    85 ;   20                 50
FCB    82 ;   19                 55
FCB    79 ;   18                 60
FCB    76 ;   17                 65
FCB    73 ;   16                 70
FCB    71 ;   15                 75
FCB    68 ;   14                 80
FCB    68 ;   14                 85
FCB    62 ;   12                 90
FCB    54 ;    9                95
FCB    54 ;    9               100
;--------------------------------------
; 3200 RPM
;           DEG Spk         Kpa MAP
;--------------------------------------
FCB   108 ;   28 DEG SA          30
FCB   102 ;   26                 35
FCB    99 ;   25                 40
FCB    93 ;   23                 45
FCB    88 ;   21                 50
FCB    85 ;   20                 55
FCB    85 ;   20                 60
FCB    85 ;   20                 65
FCB    85 ;   20                 70
FCB    85 ;   20                 75
FCB    82 ;   19                 80
FCB    65 ;   13                 85
FCB    62 ;   12                 90
FCB    56 ;   10                 95
FCB    56 ;   10                100
;--------------------------------------
; 3600 RPM
;           DEG Spk         Kpa MAP
;--------------------------------------
FCB   110 ;   29 DEG SA          30
FCB   105 ;   27                 35
FCB   102 ;   26                 40
```

```
        FCB    96 ;   24                45
        FCB    93 ;   23                50
        FCB    91 ;   22                55
        FCB    91 ;   22                60
        FCB    91 ;   22                65
        FCB    91 ;   22                70
        FCB    91 ;   22                75
        FCB    73 ;   16                80
        FCB    71 ;   15                85
        FCB    65 ;   13                90
        FCB    65 ;   13                95
        FCB    65 ;   13               100
        ********************************************


        *==============================================
        * COOLANT SA COMPENSATION
        *
        *==============================================
        ;----------------------------------------------
        ;  COOLANT COMP SPARK Vs. LOAD Vs. Deg c COOL
        ;
        ;    (12x5)
        ;   Val's show in ENG units include 20 deg bias
        ;   Added SA = tab-57/(256/90)
        ;
        ; Dissassemby of ASDZ 07-19-1998 14:21:16
        ;
        ;
        ; TBL = (256/90) x SPK +  20
        ;----------------------------------------------
        ORG $0107   ;
                    ;
LD107:  FCB  16     ; Min Deg c COOL Val
        FCB  64     ; Min Kpa VAC Val
        FCB  5      ; LINES/BLOCK
                    ;
        ;----------------------------------------------
        ; 5 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;----------------------------------------------
LD10A   FCB  71     ;  5.0            40
LD10A   FCB  80     ;  8.1            30
LD10A   FCB  85     ;  9.9            20
LD10A   FCB  85     ;  9.9            10
LD10A   FCB  85     ;  9.9             0
        ;----------------------------------------------
        ; 15 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;----------------------------------------------
LD10F   FCB  71     ;  5.0            40
LD10F   FCB  80     ;  8.1            30
LD10F   FCB  85     ;  9.9            20
LD10F   FCB  85     ;  9.9            10
LD10F   FCB  85     ;  9.9             0
        ;----------------------------------------------
        ; 25 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;----------------------------------------------
LD114   FCB  57     ;  0.0            40
LD114   FCB  57     ;  0.0            30
LD114   FCB  71     ;  5.0            20
LD114   FCB  80     ;  8.1            10
LD114   FCB  80     ;  8.1             0
        ;----------------------------------------------
        ; 35 Deg c COOL
```

```
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD119   FCB  57     ;  0.0            40
LD119   FCB  57     ;  0.0            30
LD119   FCB  71     ;  5.0            20
LD119   FCB  74     ;  6.0            10
LD119   FCB  74     ;  6.0             0
        ;-----------------------------------------------
        ; 45 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD11E   FCB  57     ;  0.0            40
LD11E   FCB  57     ;  0.0            30
LD11E   FCB  57     ;  0.0            20
LD11E   FCB  68     ;  3.9            10
LD11E   FCB  68     ;  3.9             0
        ;-----------------------------------------------
        ; 55 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD123   FCB  57     ;  0.0            40
LD123   FCB  57     ;  0.0            30
LD123   FCB  57     ;  0.0            20
LD123   FCB  65     ;  2.9            10
LD123   FCB  65     ;  2.9             0
        ;-----------------------------------------------
        ; 65 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD128   FCB  57     ;  0.0            40
LD128   FCB  57     ;  0.0            30
LD128   FCB  57     ;  0.0            20
LD128   FCB  63     ;  2.2            10
LD128   FCB  63     ;  2.2             0
        ;-----------------------------------------------
        ; 75 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD12D   FCB  57     ;  0.0            40
LD12D   FCB  57     ;  0.0            30
LD12D   FCB  57     ;  0.0            20
LD12D   FCB  57     ;  0.0            10
LD12D   FCB  57     ;  0.0             0
        ;-----------------------------------------------
        ; 85 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD132   FCB  57     ;  0.0            40
LD132   FCB  57     ;  0.0            30
LD132   FCB  57     ;  0.0            20
LD132   FCB  57     ;  0.0            10
LD132   FCB  57     ;  0.0             0
        ;-----------------------------------------------
        ; 95 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD137   FCB  57     ;  0.0            40
LD137   FCB  57     ;  0.0            30
LD137   FCB  57     ;  0.0            20
LD137   FCB  57     ;  0.0            10
LD137   FCB  57     ;  0.0             0
        ;-----------------------------------------------
        ; 105 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------------
LD13C   FCB  74     ;  6.0            40
```

```
LD13C   FCB  48     ; -3.1            30
LD13C   FCB  48     ; -3.1            20
LD13C   FCB  48     ; -3.1            10
LD13C   FCB  48     ; -3.1             0
        ;-----------------------------------------
        ; 115 Deg c COOL
        ;               SPK ADV     Kpa VAC
        ;-----------------------------------------
LD141   FCB  46     ; -3.8            40
LD141   FCB  46     ; -3.8            30
LD141   FCB  46     ; -3.8            20
LD141   FCB  46     ; -3.8            10
LD141   FCB  46     ; -3.8             0
        ;-----------------------------------------


        *****************************************
        *  EGR SPK ADV vs EGR CORR FACTOR
        *
        * IF EGR ON THESE VAL'S SUB'ED FM SPK ADV
        *
        * VAL = SPK ADV * (256/90)
        *****************************************
        ORG $0146   ;
                    ; Deg Spk       %EGR
                    ;---------------------------------
LD146   FCB 0       ; 0.0          0.00
LD147   FCB 0       ; 0.0          6.25
LD148   FCB 0       ; 0.0         12.50
LD149   FCB 3       ; 1.0         18.75
LD14A   FCB 6       ; 2.1         25.00
LD14B   FCB 8       ; 2.8         31.25
LD14C   FCB 8       ; 2.8         37.50
LD14D   FCB 8       ; 2.8         43.75
LD14E   FCB 8       ; 2.8         50.00
LD14F   FCB 8       ; 2.8         56.25
LD150   FCB 8       ; 2.8         62.50
LD151   FCB 8       ; 2.8         68.75
LD152   FCB 8       ; 2.8         75.00
LD153   FCB 8       ; 2.8         81.25
LD154   FCB 8       ; 2.8         87.50
LD155   FCB 8       ; 2.8         93.75
LD156   FCB 8       ; 2.8        100.00 %
        *****************************************


        ;-----------------------------------------
        ; HIWAY SPK ADV vs VACUUM
        ;
        ; ADDED SPK IF IN HIWAY MODE
        ; (See D024 & D025 FOR QUAL'S)
        ;
        ; VAL = SPK ADV * (256/90)
        ;-----------------------------------------
        ORG $0D57   ; Spk       Vac Kpa
                    ;---------------------------------
LD157   FCB 0       ; 0         50
LD158   FCB 0       ; 0         40
LD159   FCB 0       ; 0         30
LD15A   FCB 0       ; 0         20
LD15B   FCB 0       ; 0         10
LD15C   FCB 0       ; 0          0
        ;-----------------------------------------


        *****************************************
```

```
        * PWR ENRICH SA CORRECTION TBL
        *
        * INCR SA IF PWR ENRICH IS ON
        *
        * VAL = SPK ADV * (256/90)
        ******************************************
LD15D:  FCB 144     ; 3600 RPM, UPPER TBL LIMIT
                    ;
                    ; SPK       RPM
                    ;---------------------------------
LD15E   FCB 14      ; 4.9       800
LD15F   FCB 6       ; 2.1       1200
LD160   FCB 6       ; 2.1       1600
LD161   FCB 14      ; 4.9       2000
LD162   FCB 14      ; 4.9       2400
LD163   FCB 14      ; 4.9       2800
LD164   FCB 14      ; 4.9       3200
LD165   FCB 14      ; 4.9       3600
        ******************************************


        ;-----------------------------------------
        ; DEG BURST KNOCK RETARD vs COOL
        ;
        ;  VAL = SPK ADV * (256/90)
        ;-----------------------------------------
LD166:  FCB 208     ; 110c,  UPPER TBL LIMIT
                    ;
                    ;  Deg's        Deg c COOL
                    ;------------------------------
LD167   FCB 0       ; 0              75
LD168   FCB 0       ; 0              85
LD169   FCB 0       ; 0              95
LD16A   FCB 0       ; 0             100
LD16B   FCB 0       ; 0             105
LD16C   FCB 0       ; 0             110
        ;-----------------------------------------


        *==========================================
        * START UP SPARK
        *
        *==========================================
        ;-----------------------------------------
        ; SPK TIME OUT vs COOL
        ;
        ; INITIAL SA WHICH IS DECAYED IN SOME TIME PERIOD
        ; SET BY TBL LD173
        ;
        ; VAL = SPK ADV * (256/90)
        ;-----------------------------------------
LD16D:  FCB 4       ; 5 LINE TABLE
                    ;
                    ; Deg's     Deg c COOL
                    ;--------------------------------
LD16E   FCB 14      ; 4.9       COLD
LD16F   FCB 28      ; 10        24.0
LD170   FCB 28      ; 10        49.7
LD171   FCB 28      ; 10        80.5
LD172   FCB 14      ; 4.9       HOT
        ;-----------------------------------------


        ;-----------------------------------------
        ; SPK TIME OUT DECAY DELAY vs COOL
```

```
        ;
        ;  TBL = SECONDS
        ;---------------------------------------------
LD173:  FCB  4      ; 5 LINE TABLE
                    ;
                    ; Dec's     Deg c CPPL
                    ;---------------------------------
LD174   FCB   40    ; 40        COLD
LD175   FCB   30    ; 30        24.0
LD176   FCB   20    ; 20        49.7
LD177   FCB   10    ; 10        80.5
LD178   FCB   5     ;  5        HOT
        ;---------------------------------------------


        ;---------------------------------------------
        ; SPK TIME OUT DECAY MULT vs COOL
        ;
        ; TBL = %MULT * 2.56
        ;---------------------------------------------
        ORG $0179   ;
                    ;
LD179:  FCB  4      ; 5 LINE TABLE
                    ;
                    ; %MULT     Deg c COOL
                    ;-------------------------------
LD17A   FCB  251    ; 98       COLD
LD17B   FCB  248    ; 96       24.0
LD17C   FCB  243    ; 95       49.7
LD17D   FCB  236    ; 92       80.5
LD17E   FCB  205    ; 80       HOT
        ;---------------------------------------------
        *=============================================


        *=============================================
        * SPARK RETARD TABLES
        *
        *=============================================
        *********************************************
        * MAX KNK RETARD LIMITS IN PWR ENR vs RPM
        * ASDZ, TYPE $42,  9 lines
        *
        *  TBL = SPK RETARD * (256/45)
        *********************************************
        ORG $017F   ;
                    ; Deg           RPM
                    ;---------------------------------
LD17F   FCB 34      ; 5.9         400
LD180   FCB 34      ; 5.9         600
LD181   FCB 34      ; 5.9         800
LD182   FCB 46      ; 8.0        1200
LD183   FCB 46      ; 8.0        1600
LD184   FCB 46      ; 8.0        2000
LD185   FCB 46      ; 8.0        2400
LD186   FCB 46      ; 8.0        3200
LD187   FCB 46      ; 8.0        4000
        *********************************************


        *********************************************
        * MAX KNK RETARD vs VACUUM
        * ASDZ, 5 LINES
        *
        *  TBL = SPK RETARD * (256/45)
        *********************************************
```

```
        ORG $0188   ;
                    ; Deg.      Kpa VAC
                    ;---------------------------------
LD188   FCB 34      ; 5.9       40
LD189   FCB 46      ; 8.0       30
LD18A   FCB 46      ; 8.0       20
LD18B   FCB 46      ; 8.0       10
LD18C   FCB 46      ; 8.0        0
        ******************************************


        ;-----------------------------------------------
        ; RETARD ATTACK RATE vs RPM
        ;
        ; TYPE $42 ECM, ASDZ
        ;
        ; DEG/MSEC
        ; TBL = (DEG/MS)/.0255
        ;-----------------------------------------------
        ORG $018D   ;
                    ; Deg/msec      RPM
                    ;---------------------------------
LD18D   FCB 2       ; 0.102      400
LD18E   FCB 9       ; 0.230      600
LD18F   FCB 9       ; 0.230      800
LD190   FCB 9       ; 0.230     1200
LD191   FCB 9       ; 0.230     1600
LD192   FCB 9       ; 0.230     2000
LD193   FCB 9       ; 0.230     2400
LD194   FCB 13      ; 0.332     3200
LD195   FCB 16      ; 0.360     4000
    ;-------------------------------------------------


    ;-------------------------------------------------
    ;  RETARD RECOVERY RATE vs RPM
    ;
    ;  Dissassemby of ARJU, LINES =  9
    ;  03-22-1994, 10:56:16
    ;
    ;  TBL = (%/MS) * (256/500)
    ;  TBL =  0.512  * %/MS
    ;-------------------------------------------------
        ORG $0196   ;  pct/msec       RPM
                    ;---------------------------------
LD196  FCB   220    ;   429.7         400
LD197  FCB   50     ;    97.7         600
LD198  FCB   50     ;    97.7         800
LD199  FCB   50     ;    97.7        1200
LD19A  FCB   50     ;    97.7        1600
LD19B  FCB   50     ;    97.7        2000
LD19C  FCB   40     ;    78.1        2400
LD19D  FCB   40     ;    78.1        3200
LD19E  FCB   40     ;    78.1        4000
    ;-------------------------------------------------



    ;-----------------------------------------------
    ; SPK LATENCIES CORRECTION vs RPM
    ; 0 - 4800 RPM
    ;
    ; TBL = USEC/15.26
    ;-----------------------------------------------
LD19F   FCB 192     ; UPPER TBL RPM LIMIT
                    ;
```

```
                    ; usec          RPM
                    ;-------------------------------
LD1A0   FCB 0       ;   0             0
LD1A1   FCB 0       ;   0           400
LD1A2   FCB 0       ;   0           800
LD1A3   FCB 3       ;  46          1200
LD1A4   FCB 7       ; 107          1600
LD1A5   FCB 9       ; 137          2000
LD1A6   FCB 9       ; 137          2400
LD1A7   FCB 12      ; 183          2800
LD1A8   FCB 11      ; 168          3200
LD1A9   FCB 9       ; 137          3600
LD1AA   FCB 10      ; 153          4000
LD1AB   FCB 10      ; 153          4400
LD1AC   FCB 9       ; 137          4800
        ;---------------------------------------------


        ;---------------------------------------------
        ; BARRO CORECTION vs TPS
        ;
        ; TBL = N * 2.7 * (256/40)
        ; TBL = N * 17.28
        ;
        ; Kpa/1K RPM
        ;---------------------------------------------
LD1AD:  FCB 4       ; 5 LINE TABLE
                    ;
                    ; Kpa/1K RPM     %TPS
                    ;----------------------------------
LD1AE   FCB 255     ; 14.76           0
LD1AF   FCB 236     ; 13.65          25
LD1B0   FCB 85      ;  4.92          50
LD1B1   FCB 45      ;  2.60          75
LD1B2   FCB 27      ;  1.56         100
        ;---------------------------------------------
        *=============================================
        * END OF SPARK PARAMS
        *=============================================


        *=============================================
        * EGR PARAM'S
        *
        *=============================================
LD1B3:  FCB 132     ; 48c COOL FOR EGR ENABLE (1K PU)  TBL 3
                    ;
LD1B4   FCB 0       ; 0 MPH LO VSS THRESH  FOR EGR ENABLE
LD1B5   FCB 0       ; 0 MPH HI VSS THRESH  FOR EGR ENABLE
                    ;
LD1B6:  FCB 5       ; 2%,  LOW TPS  FOR EGR ENABLE              <*****
LD1B7   FCB 8       ; 3%,  HI  TPS  FOR EGR ENABLE              <*****
                    ;
LD1B8   FCB 48      ; 35 Kpa MAP,  VACUUM  FOR EGR ENABLE       <*****
LD1B9   FCB 56      ; 38 Kpa MAP,  VACUUM  FOR EGR ENABLE       <*****
                    ; TBL 4.0
                    ;
LD1BA   FCB 255     ; 0.9960 SPK COEF FOR EGR OFF SPK FILTER
LD1BB   FCB 16      ; 0.0625 SPK COEF FOR EGR ON SPK FILTER
                    ;
LD1BC   FCB 230     ; 0.898 EGR D.C. FILTER COEF
                    ;
LD1BD   FCB 51      ; 19.9% D.C. THRESH FOR EGR ON
LD1BE   FCB 254     ; 1 Kpa VAC THRESH FOR EGR ON, (100 Kpa)
                    ;
LD1BF   FCB 128     ; 50% TPS HI TPS THRESH EGR
```

```
                ; AFTER 50% GAIN = 0
                ;

        ******************************************
        * PCT EGR Vs. VAC LOAD  Vs. RPM
        *
        * 01-31-1996 Dissassemby of ASDZ  Blocks = 7
        *
        * TBL =  2.56  * %EGR
        ******************************************
        ORG $01C0

LD1C0:  FCB 0       ; LD SEL 0 = VACUUM, 1 = MAP
                    ;
LD1C1   FCB  80     ; RPM MIN, RPM/12.5, 1000 RPM
        FCB  32     ; VAC MIN, 70 Kpa
        FCB  7      ; LINES/BLOCK
        ;-------------------------------------------
        ; 1000 RPM
        ;             %EGR              Kpa VAC
        ;-------------------------------------------
LD1C4   FCB  255    ;    99.6            60
LD1C5   FCB  255    ;    99.6            50
LD1C6   FCB  255    ;    99.6            40
LD1C7   FCB  255    ;    99.6            30
LD1C8   FCB  255    ;    99.6            20
LD1C9   FCB  255    ;    99.6            10
LD1CA   FCB  255    ;    99.6             0
        ;-------------------------------------------
        ; 1200 RPM
        ;               %EGR             Kpa VAC
        ;-------------------------------------------
LD1CB   FCB  255    ;    99.6            60
LD1CC   FCB  255    ;    99.6            50
LD1CD   FCB  255    ;    99.6            40
LD1CE   FCB  255    ;    99.6            30
LD1CF   FCB  255    ;    99.6            20
LD1D0   FCB  255    ;    99.6            10
LD1D1   FCB  255    ;    99.6             0
        ;-------------------------------------------
        ; 1400 RPM
        ;             %EGR            Kpa vAC
        ;-------------------------------------------
LD1D2   FCB  255    ;    99.6            60
LD1D3   FCB  255    ;    99.6            50
LD1D4   FCB  255    ;    99.6            40
LD1D5   FCB  255    ;    99.6            30
LD1D6   FCB  255    ;    99.6            20
LD1D7   FCB  255    ;    99.6            10
LD1D8   FCB  255    ;    99.6             0
        ;-------------------------------------------
        ; 1600 RPM
        ;               %EGR            Kpa VAC
        ;-------------------------------------------
LD1D9   FCB  255    ;    99.6            60
LD1DA   FCB  255    ;    99.6            50
LD1DB   FCB  255    ;    99.6            40
LD1DC   FCB  255    ;    99.6            30
LD1DD   FCB  255    ;    99.6            20
LD1DE   FCB  255    ;    99.6            10
LD1DF   FCB  255    ;    99.6             0
        ;-------------------------------------------
        ; 1800 RPM
        ;               %EGR            Kpa VAC
        ;-------------------------------------------
LD1E0   FCB  255    ;    99.6            60
```

```
LD1E1   FCB  255    ;    99.6            50
LD1E2   FCB  255    ;    99.6            40
LD1E3   FCB  255    ;    99.6            30
LD1E4   FCB  255    ;    99.6            20
LD1E5   FCB  255    ;    99.6            10
LD1E6   FCB  255    ;    99.6             0
        ;-----------------------------------------
        ; 2200 RPM
        ;               %EGR            Kpa VAC
        ;-----------------------------------------
LD1E7   FCB  255    ;    99.6            60
LD1E8   FCB  255    ;    99.6            50
LD1E9   FCB  255    ;    99.6            40
LD1EA   FCB  255    ;    99.6            30
LD1EB   FCB  255    ;    99.6            20
LD1EC   FCB  255    ;    99.6            10
LD1ED   FCB  255    ;    99.6             0
        ;-----------------------------------------
        ; 3000 RPM
        ;               %EGR            Kpa VAC
        ;-----------------------------------------
LD1EE   FCB  255    ;    99.6            60
LD1EF   FCB  255    ;    99.6            50
LD1F0   FCB  255    ;    99.6            40
LD1F1   FCB  255    ;    99.6            30
LD1F2   FCB  255    ;    99.6            20
LD1F3   FCB  255    ;    99.6            10
LD1F4   FCB  255    ;    99.6             0
        ;-----------------------------------------


        ;-----------------------------------------
        ; EGR GAIN vs COOLANT
        ;
        ; VAL = N * 128
        ;-----------------------------------------
LD1F5:  FCB 152     ; 60C, UPPER TBL LIMIT
                    ;
                    ; GAIN      Deg c
                    ;---------------------------------
LD1F6   FCB 128     ; 1.00          20
LD1F7   FCB 128     ; 1.00          30
LD1F8   FCB 128     ; 1.00          40
LD1F9   FCB 128     ; 1.00          50
LD1FA   FCB 128     ; 1.00          60
LD1FB   FCB 128     ; 1.00          70
LD1FC   FCB 128     ; 1.00          80
LD1FD   FCB 128     ; 1.00          90
        ;-----------------------------------------


        ;-----------------------------------------
        ; EGR GAIN GAIN FACTOR vs BARO & MAP
        ;
        ; TBL = GAIN * 128
        ;-----------------------------------------
        ORG $01FE   ;
                    ;
LD1FE:  FCB 32      ; 40 Kpa MAP MIN
        FCB 96      ; 75 Kpa BARO MIN
        FCB 4       ; 4 BARO'S BP'S/MAP
                    ;
        ;---------------------------------------
        ; 40 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
```

```
LD201   FCB  123    ; 0.96       75
LD202   FCB  128    ; 1.00       85
LD203   FCB  128    ; 1.00       95
LD204   FCB  128    ; 1.00       105
        ;---------------------------------------
        ; 50 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
LD205   FCB 123         ; 0.96       75
LD206   FCB 128         ; 1.00       85
LD207   FCB 128         ; 1.00       95
LD208   FCB 128         ; 1.00       105
        ;---------------------------------------
        ; 60 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
LD209   FCB 123         ; 0.96       75
LD20A   FCB 128         ; 1.00       85
LD20B   FCB 128         ; 1.00       95
LD20C   FCB 128         ; 1.00       105
        ;---------------------------------------
        ; 70 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
LD20D   FCB 123         ; 0.96       75
LD20E   FCB 128         ; 1.00       85
LD20F   FCB 128         ; 1.00       95
LD210   FCB 128         ; 1.00       105
        ;---------------------------------------
        ; 80 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
LD211   FCB 123         ; 0.96       75
LD212   FCB 128         ; 1.00       85
LD213   FCB 128         ; 1.00       95
LD214   FCB 128         ; 1.00       105
        ;---------------------------------------
        ; 90 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
LD215   FCB             ; 0.96       75
LD216   FCB             ; 1.00       85
LD217   FCB             ; 1.00       95
LD218   FCB             ; 1.00       105
        ;---------------------------------------
        ; 100 Kpa MAP
        ;               GAIN        Kpa Baro
        ;---------------------------------------
        FCB 123         ;0.96       75
        FCB 128         ;1.00       85
        FCB 128         ;1.00       95
        FCB 128         ;1,00       105
        ;-----------------------------------------


        ******************************************
        * 454 CID DIFF VALS NO EVEN SPACING IN NUM VALUE
        * 0, 16 & 32 HEADER ARE SAME
        * EGR CORR FACTOR vs VACUUM & EGR D.C.
        ******************************************
        *
        * EGR CORRECTION Vs. VACUUM Vs. EGR D.C.
        *
        * ASDZ BP EGR
        *
        * TBL = Factor * 256
```

```
        ********************************************
                          ;
LD21D:  FCB 48            ;  30% DC MIN
        FCB 0             ; MIN Kpa VAC
        FCB 13            ; BP'S per D.c.
                          ;
       ;-----------------------------------
       ; 30 Pct EGR
       ;                   MULT       Kpa VAC
       ;-----------------------------------
LD220   FCB 0             ; 0.000      0.0
LD221   FCB 16            ; 0.063      2.5
LD222   FCB 32            ; 0.125      5.0
LD223   FCB 48            ; 0.188      7.5
LD224   FCB 64            ; 0.025     10.0
LD225   FCB 80            ; 0.313     12.5
LD226   FCB 96            ; 0.375     15.0
LD227   FCB 112           ; 0.438     17.5
LD228   FCB 128           ; 0.500     20.0
LD229   FCB 144           ; 0.563     30.0
LD22A   FCB 160           ; 0.625     40.0
LD22B   FCB 176           ; 0.688     50.0
LD22C   FCB 192           ; 0.759     60.0
       ;-----------------------------------
       ; 40 Pct EGR
       ;                   MULT       Kpa VAC
       ;-----------------------------------
LD22D   FCB 0             ; 0.000      0.0
LD22E   FCB 16            ; 0.063      2.5
LD22F   FCB 32            ; 0.125      5.0
LD230   FCB 48            ; 0.188      7.5
LD231   FCB 64            ; 0.025     10.0
LD232   FCB 80            ; 0.313     12.5
LD233   FCB 96            ; 0.375     15.0
LD234   FCB 112           ; 0.438     17.5
LD235   FCB 128           ; 0.500     20.0
LD236   FCB 144           ; 0.563     30.0
LD237   FCB 160           ; 0.625     40.0
LD238   FCB 176           ; 0.688     50.0
LD239   FCB 192           ; 0.759     60.0
       ;-----------------------------------
       ; 50 Pct EGR
       ;                   MULT       Kpa VAC
       ;-----------------------------------
LD23A   FCB 0             ; 0.000      0.0
LD23B   FCB 16            ; 0.063      2.5
LD23C   FCB 32            ; 0.125      5.0
LD23D   FCB 48            ; 0.188      7.5
LD23E   FCB 64            ; 0.025     10.0
LD23F   FCB 80            ; 0.313     12.5
LD240   FCB 96            ; 0.375     15.0
LD241   FCB 112           ; 0.438     17.5
LD242   FCB 128           ; 0.500     20.0
LD243   FCB 144           ; 0.563     30.0
LD244   FCB 160           ; 0.625     40.0
LD245   FCB 176           ; 0.688     50.0
LD246   FCB 192           ; 0.759     60.0
       ;-----------------------------------
       ; 60 Pct EGR
       ;                   MULT       Kpa VAC
       ;-----------------------------------
LD247   FCB 0             ; 0.000      0.0
LD248   FCB 16            ; 0.063      2.5
LD249   FCB 32            ; 0.125      5.0
LD24A   FCB 48            ; 0.188      7.5
LD24B   FCB 64            ; 0.025     10.0
```

```
LD24C   FCB 80          ; 0.313     12.5
LD24D   FCB 96          ; 0.375     15.0
LD24E   FCB 112         ; 0.438     17.5
LD24F   FCB 128         ; 0.500     20.0
LD250   FCB 144         ; 0.563     30.0
LD251   FCB 160         ; 0.625     40.0
LD252   FCB 176         ; 0.688     50.0
LD253   FCB 192         ; 0.759     60.0
       ;-----------------------------------
       ; 70 Pct EGR
       ;                 MULT       Kpa VAC
       ;-----------------------------------
 LD254   FCB 0          ; 0.000      0.0
 LD255   FCB 16         ; 0.063      2.5
 LD256   FCB 32         ; 0.125      5.0
 LD257   FCB 48         ; 0.188      7.5
 LD258   FCB 64         ; 0.025     10.0
 LD259   FCB 80         ; 0.313     12.5
 LD25A   FCB 96         ; 0.375     15.0
 LD25B   FCB 112        ; 0.438     17.5
 LD25C   FCB 128        ; 0.500     20.0
 LD25D   FCB 144        ; 0.563     30.0
 LD25E   FCB 160        ; 0.625     40.0
 LD25F   FCB 176        ; 0.688     50.0
 LD260   FCB 192        ; 0.759     60.0
       ;-----------------------------------
       ; 80 Pct EGR
       ;                 MULT       Kpa VAC
       ;-----------------------------------
LD261   FCB 0           ; 0.000      0.0
LD262   FCB 16          ; 0.063      2.5
LD263   FCB 32          ; 0.125      5.0
LD264   FCB 48          ; 0.188      7.5
LD265   FCB 64          ; 0.025     10.0
LD266   FCB 80          ; 0.313     12.5
LD267   FCB 96          ; 0.375     15.0
LD268   FCB 112         ; 0.438     17.5
LD269   FCB 128         ; 0.500     20.0
LD26A   FCB 144         ; 0.563     30.0
LD26B   FCB 160         ; 0.625     40.0
LD26C   FCB 176         ; 0.688     50.0
LD26D   FCB 192         ; 0.759     60.0
       ;-----------------------------------
       ; 90 Pct EGR
       ;                 MULT       Kpa VAC
       ;-----------------------------------
LD26E   FCB 0           ; 0.000      0.0
LD26F   FCB 16          ; 0.063      2.5
LD270   FCB 32          ; 0.125      5.0
LD271   FCB 48          ; 0.188      7.5
LD272   FCB 64          ; 0.025     10.0
LD273   FCB 80          ; 0.313     12.5
LD274   FCB 96          ; 0.375     15.0
LD275   FCB 112         ; 0.438     17.5
LD276   FCB 128         ; 0.500     20.0
LD277   FCB 144         ; 0.563     30.0
LD278   FCB 160         ; 0.625     40.0
LD279   FCB 176         ; 0.688     50.0
LD27A   FCB 192         ; 0.759     60.0
       ;-----------------------------------
       ; 100 Pct EGR
       ;                MULT        Kpa VAC
       ;-----------------------------------
LD27B   FCB 0           ; 0.000      0.0
LD27C   FCB 16          ; 0.063      2.5
LD27D   FCB 32          ; 0.125      5.0
```

```
LD27E   FCB 48          ; 0.188      7.5
LD27F   FCB 64          ; 0.025     10.0
LD280   FCB 80          ; 0.313     12.5
LD281   FCB 96          ; 0.375     15.0
LD282   FCB 112         ; 0.438     17.5
LD283   FCB 128         ; 0.500     20.0
LD284   FCB 144         ; 0.563     30.0
LD285   FCB 160         ; 0.625     40.0
LD286   FCB 176         ; 0.688     50.0
LD287   FCB 192         ; 0.759     60.0
        ;-----------------------------------------


        *=========================================
        * AFR PARAM'S
        *
        *=========================================
                    ;--------------------------------
LD288:  FCB 96      ; 37.5% TPS HI/LO THRESH  (GAIM TERM)
                    ; TPS LD = (LD288/64) * A/D TPS - LD289)
                    ;
LD289:  FCB 64      ; 25% Min TPS POSIT  (OFF SET TERM)
                    ;--------------------------------
LD28A:  FCB 32      ; LOW TPS COEF
                    ;
LD28B:  FCB 255     ; MNR LOOP o2 COEF
LD28C:  FCB 2       ; SLOW o2 COEF FOR IDLE
                    ;
LD28D:  FCB 104     ; o2 FILT INIT 451 mvdc
                    ; VAL = N*230.4
                    ;
LD28E   FCB 16      ; COOL FILT COEF  (100 msec reads)
LD28F   FCB 16      ; ACCEL ENRICH DIFF MAP 5 KPA
                    ;
LD290   FCB 115     ; FILT COEF TPS
LD291   FCB 165     ; FILT COEF TPS
                    ;
LD292   FCB 5       ;  2%, DIFF TPS REQ FOR PWR ENRICH WHILE IN PWR ENRICH
LD293   FCB 4       ; 244 usec ADDED TO BPW WHILE IAC IS OPENING
                    ; VAL = MSEC * 16.384
                    ;
LD294   FCB 1       ; 100 MSEC TRANS FUEL CALC Intervle
LD295   FCB 52      ; TPS Filter Coef

        ;
        ; CLOSED LOOP TIMER QUALS
        ;
                    ;---------------------------------
LD296   FCB 102     ; 60 Deg c, (140f) CLS LP Timer WARM Thresh, (1K PU)
                    ;
LD297   FCB 20      ; 10.0 Sec WARM CLS LP Timer
LD298   FCB 95      ; 47.5 Sec COLD CLS LP Timer
                    ;--------------------------------
LD299   FCB 64      ; 35c, COOL Min for CLS LP Enable
LD29A   FCB 100     ;; 35c, COOL Min for CLS LP Enable
                    ;
        *=========================================
        * BLM MAP & RPM QUALIFIERS
        * ASDZ, $42 5.7L V8
        *=========================================
LD29B   FCB 1       ; 20.0 Kpa MAP THRESH FOR BLM          <*******
LD29C   FCB 254     ; 99.3 Kpa MAP UPPER THRESH FOR BLM    <*******
LD29D   FCB 140     ; 3500 RPM UPPER BLM THRESH            <*******
        *=========================================

        ;-----------------------------------------
```

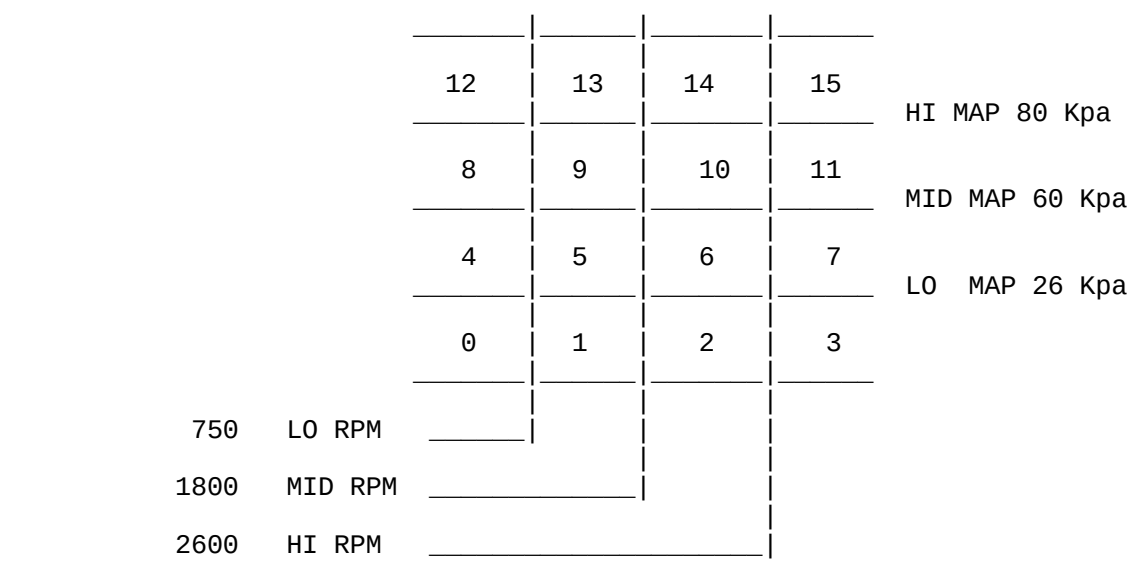
```
        ; OPEN LOOP IDLE CALIBRATIONS
        ; L05
        ;
        ;---------------------------------------------
LD29E   FCB 4       ; 4 MPH, OPN LP IDLE THRESH
LD29F   FCB 5       ; 2%, OPN LP IDLE THRESH TPS

LD2A0   FCB 1       ; 25 RPM, Open loop RPM thresh IDLE OFF
LD2A1   FCB 2       ; 50 RPM, Open loop RPM thresh IDLE ON

LD2A2   FCB 160     ; 8 Sec's, Open loop IDLE AFR Ratio enable TIME DELAY
LD2A3   FCB 100     ; 5 Sec's, Open loop IDLE AFR Ratio TIME DELAY
LD2A4   FCB 137     ; 13.7 Open loop AFR MAX AT IDLE
        ;---------------------------------------------

LD2A5   FCB 6       ; 6 MPH Open loop DECEL THRESH
LD2A6   FCB 254     ; 6350 RPM Open loop DECEL THRESH
LD2A7   FCB 0       ; -40c Open loop DECEL THRESH
                    ;
LD2A8   FCB 150     ; Open loop AFR MAX 15.0
LD2A9   FCB 140     ; 14.0 LEAN Open loop AFR LMT AT IDLE
        ;---------------------------------------------

LD2AA   FCB 147     ; 14.7 AFR (STOCH)
                    ;
LD2AB   FCB 8       ; Freq of blk learn update, (450 Msec)
                    ; VAL = (N * 20)+1
```




```
LD2AC:  FCB 30      ; 750  RPM, BLM Cell boundry
LD2AD   FCB 72      ; 1800 RPM, BLM Cell boundry
LD2AE:  FCB 104     ; 2600 RPM, BLM Cell boundry
                    ;
LD2AF:  FCB 20      ; 17.7 Kpa, BLM Cell boundry
LD2B0:  FCB 128     ; 57.6 Kpa, BLM Cell boundry
LD2B1:  FCB 192     ; 81.2 Kpa, BLM Cell boundry

LD2B2:  FCB 3       ; 75 RPM   BLM cell Hyst
LB2B3:  FCB 8       ; 3.3 Kpa  BLM cell Hyst

        *=============================================
        * ASDZ INJECTOR FLOW COEF
        *=============================================
LD2B4:  FCB 135     ; BPW const for EGR off,
```

```
        ;-------------------------------------------
        ; LD2B4 Constant is used for fuel BPW when
        ; EGR is off.
        ;
        ; If EGR is on, table LD324 gives a different
        ; contstant vs Vacumm for EGR compensation
        ;
        ; During EGR transients the val is filtered
        ; between the two constants for smoothing
        ;
        ;   Values shown for 5.7l engine:
        ;
        ; TBI:
        ;   Val = 1461.5  * (VOL/RATE)
        ;           VOL  = Vol of 1 Cylinder in liters, (0.7125l)
        ;           RATE = Injector flow in gms/sec
        :                  5.7l = 7.71 gms/sec (61.2#/HR)
        ;                  (VOL/RATE) = 0.0924  l/gm/sec
        ; LD2B4: BPW = 135
        ;
        ; PFI:
        ;    Val = 365.375 * (VOL/RATE)
        ;           VOL  = Vol of 1 Cylinder in liters, (0.7125l)
        ;           RATE = Injector flow in gms/sec
        :                  5.7l = 1.92751 gms/sec (#/HR)
        ;                  (VOL/RATE) = 0.3696 l/gm/sec
        ; LD2B4: BPW = 135
        ;
        ; EC PFI:
        ;    Val = 365.375 * (VOL/RATE)
        ;           VOL  = Vol of 1 Cylinder in liters, (0.7125l)
        ;           RATE = Injector flow in gms/sec
        :                  5.7l = 2.331 gms/sec (#/HR)
        ;                  (VOL/RATE) = 0.3056 l/gm/sec
        ; LD2B4: BPW = 112
        ;-------------------------------------------


        ;
        ; EGR OFF TO ON FILTER
        ;
LB2B5:  FCB 15      ;  5.8%, EGR off filter coef
LB2B6:  FCB 32      ; 12.5%, EGR  on filter coef
                    ;
LB2B7:  FCB 4       ; Clsd lp intagrator window val, 4
LD2B8:  FCB 1       ; BLM modifier (val * 128), 1.28%

        ;-------------------------------------------------
LD2B9:  FCB 172     ; MAX BLM
LD2BA:  FCB 108     ; MIN BLM
                    ;
LD2BB:  FCB 135     ; MAX BLM VALUE AT INIT
LD2BC   FCB 125     ; MIN BLM VALUE AT INIT
        ;-------------------------------------------------

        ;------------------
        ; o2 STATE LIMITS
        ; VAL = N*230.4
        ;------------------
        ;-------------------------------
        ; STAY IN CLSD LOOP WINDOW
        ;-------------------------------
LD2BD:  FCB 161     ; 699 mvdc, o2 UPPER LIMIT
LD2BE:  FCB 81      ; 352 mvdc, o2 LOWER LIMIT
        ;-------------------------------
```

```
        ;-------------------------------
        ; TO GO CLSD LOOP O2 MUST EXCEED
        ; LD2BF - LD2C0 WINDOW
        ;-------------------------------
LD2BF:  FCB 169     ; 734 mvdc o2 UPPER LIMIT
LD2C0:  FCB 81      ; 352 mvdc o2 LOWER LIMIT
        ;-------------------------------

        ;
        ; CLS LP DECEL, ENLEAN QUALS
        ; to not used clsed loop correction
        ;
LD2C1   FCB 19      ;   17 Kpa, CLS Loop Decel, enlean MAP thresh
LD2C2   FCB 40      ; 1000 RPM, CLS Loop Decel, enlean RPM thresh


        ;---------------------------------------
LD2C3   FCB 40      ; CLS LP Min INTAGRATOR VAL
LD2C4   FCB 158     ; CLS lP Max INTAGRATOR VAL
        ;---------------------------------------

LD2C5   FCB 162     ; 16.2 MAX AFR

        ;--------------
        ; CLEAR FLOOD
        ;--------------
LD2C6:  FCB 166     ;  65%,(3.23vdc), TPS VALUE, CLEAR FLOOD
LD2C7:  FCB 60      ; CLR FLOOD AFR  6.0:1
        ;--------------

LD2C8:  FCB 218     ; 10c, Cool TEMP THRSH FOR COLD START
                    ; (A/D 1K PU)

        ;=============================================
        ; POWER ENRICH  PARAMS
        ; MY90/81  L05
        ;=============================================
        ;-------------------------------------------------
        ; IF COOL OUTSIDE WINDOW PWR ENRICH
        ; NOT DELAYED   L05
        ;-------------------------------------------------
LD2C9:  FCB  88     ;  50c, LOWER cool THRSH FOR Pwr Enr BYPASS DELAY
LD2CA:  FCB  192    ; 105c, UPPER cool THRSH FOR Pwr Enr BYPASS DELAY
                    ;
        ;-------------------------------------------------
LD2CB:  FCB 26      ;  10.1% PWR ENR TPS HYST
LD2CC:  FCB 112     ; DELAY PWR ENRICH BELOW 2800 RPM
LD2CD:  FCB 179     ; PWR ENRICH NOT DLY'ED IF TPS G.T. 69.9%
LD2CE   FCB 0       ; Pwr Enr ON DELAY TMR, 0 Sec's
                    ; VAL = SEC * 20
                    ;
LD2CF:  FCB 96      ; 55c 131f, COOL TEMP THRSH FOR PWR ENRICH
LD2D0:  FCB 80      ; 2000 RPM THRESH FOR PWR ENRICH

        ;=============================================
        ; CHOKE FUNCTIONS
        ;
        ;=============================================
LD2D1:  FCB 15      ; 1.5:1 AFR PWR ENRICH FOR COLD
                    ;
LD2D2:  FCB 8       ; 1.8 Sec's, COLD AFR (CHOKE) TIME OUT, N = Sec * 5 -1
                    ;
LD2D3:  FCB 10      ; 2 Sec's, COOL TIME OUT (CHOKE)
                    ; N = SEC * 5
                    ;
LD2D4:  FCB 10      ; 2 Sec's, HOT TIME OUT DECAY
```

```
                    ;
LD2D5:  FCB 64      ; 80c COOL THRESH FOR TIME OUT DECAY
                    ; TBL 3
        ;===============================================


        ;-----------------------------------------------
        ; BPW PW'S ASDZ, 5.7l ($42)
        ;
        ; CAL = msec * 65.536
        ;-----------------------------------------------
LD2D6:  FDB 0033    ; 504 usec, MIN BPW HYST VAL
LD2D8:  FDB 0020    ; 305 usec, MIN BPW

LD2DA:  FDB 0026    ; 397 usec, INJ BIAS (ADDED)
LD2DC:  FDB 0786    ; 11.99 Msec, MAX ASYNCH BPW
                    ; ANY EXCESS SAVE & DELIVERED LATER
                    ;
LD2DE:  FDB 0045    ; 687 usec, MIN ASYNC PW
                    ; SHORTER IS SAVED TILL LATER
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; DECEL ENLEAN PARAMS
        ;
        ;-----------------------------------------------
LD2E0   FCB 3       ; 1% TPS DECEL ENLEAN INCR THRESH
LD2E1:  FCB 8       ; 2.5 Kpa  DECEL ENLEAN INCR THRESH
LD2E2:  FCB 96      ; 0.375  ENLEAN MAP FACTOR
                    ; (Mult 0.375 * map for calc)


        ;-----------------------------------------------
        ; Limits for FUEL CUT OFF In decel
        ;
        ; 4 LINE TBL
        ;-----------------------------------------------
LD2E3:  FCB 56      ; 1400 RPM, FUEL CUT OFF, UPPER LIMIT
LD2E4:  FCB 40      ; 1000 RPM, FUEL CUT OFF, LOWER LIMIT
                    ;
LD2E5:  FCB 18      ; 18 MPH, FUEL CUT OFF, UPPER LIMIT
LD2E6:  FCB 15      ; 15 MPH, FUEL CUT OFF, LOWER LIMIT
        ;-----------------------------------------------

LD2E7:  FCB 8       ; 13.3 Kpa, DECEL FUEL Cut Off MAP Thresh, Lower
LD2E8:  FCB 64      ; 34.0 Kpa, DECEL FUEL Cut Off MAP Thresh, Upper
                    ;
LD2E9:  FCB 255     ; RPM/12.5, 6375 RPM  To disable Cut Off, (Decel rate)
LD2EA:  FCB 255     ; MAP inc to disable Decell Fuel Cut Off, 99.6 Kpa
                    ;
LD2EB:  FDB 0464    ; 7.07 msec, Fuel pulse WHEN EXITING Decell Fuel Cut Off
                    ; by RPM < or Pk/Neut
                    ;
LD2ED:  FCB 160     ; 2 Sec REQ FOR DECEL FUEL Cut Off
                    ;
LD2EE:  FCB 32      ; 400 Msec, AFTER DECEL FUEL Cut Off FOR BPW
                    ;           val = msec x 0.80
                    ;
LD2EF:  FCB 240     ; 3000 msec's, MIN TIME BETWEEN DECEL FUEL Cut Off
                    ;              val = msec x 0.80
                    ;
LD2F0   FCB 4       ; 2% MAX TPS FOR DECEL FUEL Cut Off
                    ;
LD2F1:  FCB 96      ; 0.102 MULT FOR BPW IN DECEL FUEL Cut Off
                    ; EVERY 12.5 msec LOOP
                    ;
```

```
LD2F2:  FCB 128     ; DISABLE DECEL FUEL Cut Off BELOW 75 c
        ;-----------------------------------------


LD2F3   FCB 30      ; 130 mvdc, o2 WINDOW FOR FAST o2 R/L
                    ;
LD2F4   FCB 4       ; 4 CNT'S ERR THRESH FOR INTAGRATOR CORRECTION
LD2F5   FCB 141     ; SCALAR FOR MAP LD IN FLOW (1-0) 0.550
LD2F6   FCB 4       ; 4 MPH THRES FOR IDLE

LD2F7   FCB 25      ; 109 mvdc o2 SENSOR BIAS AT IDLE

LD2F8   FCB 0       ; 0 sec's PROPORTIONIAL TERM DURATION AT IDLE
LD2F9   FCB 14      ; 0.0547, PROPORTIONIAL GAIN FACTOR FOR FLOW AT IDLE

LD2FA   FCB 9       ; 225 msec, INTEGRATOR DELAY BIAS AT IDLE, (sec * 40)
                    ;
LD2FB   FCB 232     ; 0.906 POS ERR MOD FACTOR  FOR RICH o2 AVG
LD2FC   FCB 192     ; 0.750 IDLE ERR CORR TO ERROR
                    ;
LD2FD   FCB 241     ; 200 Deg c THRES FOR PK to DRIVE (1K PU)
LD2FE   FCB 27      ; 2.7:1 RATIO AFR TIME OUT FOR COLD PK to DRIVE
LD2FF   FCB 50      ; 10 SEC DELAY FOR COLD AFR PK to DRV CHANGE
                    ;
LD300   FCB 30      ; 110c, (230f), SHT DWN TEMP FOR HOT RESTART ENABLE
LD301   FCB 50      ;  90c, (194f), RESTART TEMP FOR HOT RESTART ENABLED
                    ;
LD302   FCB 20      ; 0.2 AFR Rich bias for hot restart
                    ;
LD303   FCB 30      ; 30 Steps IAC Bias for hot restart
LD304   FDB 0010    ; 10 Sec's for Hot restart enabled
                    ; TIME AFTER START VAL = SEC'S

        ;-----------------------------------------
        ; MAP FILTER COEF vs COOL
        ;
        ; USED TO CALC AVG MAP VAL'S
        ;
        ; TBL = COEF * 255
        ;-----------------------------------------
LD306:  FCB 80      ; UPPER TBL LIMIT
                    ;
                    ;  COEF     Deg c
                    ;---------------------------------
LD307   FCB 13      ; 0.051     -5
LD308   FCB 26      ; 0.102     15
LD309   FCB 39      ; 0.152     35
LD30A   FCB 43      ; 0.168     55
LD30B   FCB 51      ; 0.199     75
LD30C   FCB 102     ; 0.398     95
        ;-----------------------------------------

        *=========================================
        * ACCEL ENRICH vs Diff MAP
        *
        *   **** PUMP SHOT ******
        *
        * ASDZ 5.7L V8, 5 lines
        *
        * ASYNC ONLY TO STRETCH BPW
        * Table = msec * 16.384
        *=========================================
LD30D:  FCB 4       ; 5 lines in table
                    ;
                    ;  usec     Kpa MAP
                    ;---------------------------------
```

```
LD30E   FCB 2       ; 0.20        0
LD30F   FCB 4       ; 0.24       20
LD310   FCB 7       ; 0.43       40
LD311   FCB 10      ; 0.61       60
LD312   FCB 13      ; 0.98       80
        *===========================================

        *===========================================
        * Accel Enrich vs Diff TPS Contrib vs Diff TPS
        *
        *   **** PUMP SHOT ******
        *   (11.99 Msec, MAX ASYNCH BPW AT LD2DC)
        *
        * ASDZ 5.7L V8, 9 lines
        *
        * ASYNC ONLY TO STRETCH BPW
        *  TBL =  16.384  * msec
        *  TBL = 0.016384 * usec
        *===========================================
        ORG  $0313  ;
                    ;
LD313:  FCB 128     ; MAX LIMIT 25% TPS DIFF
                    ;
                    ;  usec            Diff %TPS
                    ;---------------------------------
L0314   FCB 1       ;   60            0.0
L0315   FCB 5       ;  305            3.1
L0316   FCB 7       ;  427            6.3
L0317   FCB 10      ;  610            9.4
L0318   FCB 13      ;  793           12.5
L0319   FCB 15      ;  915           15.6
L031A   FCB 17      ; 1038           18.8
L031B   FCB 35      ; 2136           21.9
L031C   FCB 37      ; 2258           25.0
        *===========================================


        ;-------------------------------------------
        ; ACCEL ENRICH COOL TPS FILT COEF vs COOL TEMP
        ;
        ; TBL = COEF * 255
        ;-------------------------------------------
LD31D:  FCB 80      ; UPPER TBL LIMIT
                    ;
                    ; COEF          Deg c COOL
                    ;---------------------------------
LD31E   FCB 26      ; 0.102         -5
LD31F   FCB 26      ; 0.102         15
LD320   FCB 32      ; 0.125         35
LD321   FCB 38      ; 0.148         55
LD322   FCB 45      ; 0.176         75
LD323   FCB 64      ; 0.250         95
        ;-------------------------------------------


        ;-------------------------------------------
        ; BPW Constant (egr) Vs. AIR FLOW Vs. %EGR
        ;
        ; EGR VE COMP TABLE FOR AIR FLOW IN Gms/sec
        ; ASDZ, TYPE 42 ECM, 5.7l V8
        ;
        ; If EGR is ON Table LD324 gives a different
        ; contstant vs Vacumm for EGR compensation
        ;
        ; Durring EGR transients the val is filtered
        ; between the two constants for smoothing
```

```
        ;
        ;  LD2B4 Constant is used for fuel BPW when
        ;  EGR is off.
        ;
        ; Dissassemby of ASDZ 07-19-1998 14:21:00
        ;
        ; TBL IS  (VOL/RATE) Vs. PCT EGR
        ; TBL = N * 1461.5
        ; TBL = Ratio x 1461.5 0
        ;-------------------------------------------
        ORG $0324   ;
                    ;
        FCB  16     ; Min %EGR Val
        FCB  0      ; Min gms/sec Val
        FCB  17     ; LINES/BLOCK
                    ;
        ;-------------------------------------------
        ; 8 Air Flow, (gms/sec)
        ;               RATIO       %EGR
        ;-------------------------------------------
LD327   FCB  135    ; 0.0924           0
LD327   FCB  135    ; 0.0924           6
LD327   FCB  132    ; 0.0903          13
LD327   FCB  128    ; 0.0876          19
LD327   FCB  123    ; 0.0842          25
LD327   FCB  123    ; 0.0842          31
LD327   FCB  123    ; 0.0842          38
LD327   FCB  123    ; 0.0842          44
LD327   FCB  123    ; 0.0842          50
LD327   FCB  123    ; 0.0842          56
LD327   FCB  123    ; 0.0842          63
LD327   FCB  123    ; 0.0842          69
LD327   FCB  123    ; 0.0842          75
LD327   FCB  123    ; 0.0842          81
LD327   FCB  123    ; 0.0842          88
LD327   FCB  123    ; 0.0842          94
LD327   FCB  123    ; 0.0842         100
        ;-------------------------------------------
        ; 16 Air Flow, (gms/sec)
        ;               RATIO       %EGR
        ;-------------------------------------------
LD338   FCB  135    ; 0.0924           0
LD338   FCB  135    ; 0.0924           6
LD338   FCB  132    ; 0.0903          13
LD338   FCB  128    ; 0.0876          19
LD338   FCB  123    ; 0.0842          25
LD338   FCB  123    ; 0.0842          31
LD338   FCB  123    ; 0.0842          38
LD338   FCB  123    ; 0.0842          44
LD338   FCB  123    ; 0.0842          50
LD338   FCB  123    ; 0.0842          56
LD338   FCB  123    ; 0.0842          63
LD338   FCB  123    ; 0.0842          69
LD338   FCB  123    ; 0.0842          75
LD338   FCB  123    ; 0.0842          81
LD338   FCB  123    ; 0.0842          88
LD338   FCB  123    ; 0.0842          94
LD338   FCB  123    ; 0.0842         100
        ;-------------------------------------------
        ; 24 Air Flow, (gms/sec)
        ;               RATIO       %EGR
        ;-------------------------------------------
LD349   FCB  135    ; 0.0924           0
LD349   FCB  135    ; 0.0924           6
LD349   FCB  132    ; 0.0903          13
LD349   FCB  128    ; 0.0876          19
```

```
LD349   FCB  123    ; 0.0842          25
LD349   FCB  123    ; 0.0842          31
LD349   FCB  123    ; 0.0842          38
LD349   FCB  123    ; 0.0842          44
LD349   FCB  123    ; 0.0842          50
LD349   FCB  123    ; 0.0842          56
LD349   FCB  123    ; 0.0842          63
LD349   FCB  123    ; 0.0842          69
LD349   FCB  123    ; 0.0842          75
LD349   FCB  123    ; 0.0842          81
LD349   FCB  123    ; 0.0842          88
LD349   FCB  123    ; 0.0842          94
LD349   FCB  123    ; 0.0842         100
        ;-------------------------------------------
        ; 32 Air Flow, (gms/sec)
        ;               RATIO       %EGR
        ;-------------------------------------------
LD35A   FCB  135    ; 0.0924           0
LD35A   FCB  135    ; 0.0924           6
LD35A   FCB  132    ; 0.0903          13
LD35A   FCB  128    ; 0.0876          19
LD35A   FCB  123    ; 0.0842          25
LD35A   FCB  123    ; 0.0842          31
LD35A   FCB  123    ; 0.0842          38
LD35A   FCB  123    ; 0.0842          44
LD35A   FCB  123    ; 0.0842          50
LD35A   FCB  123    ; 0.0842          56
LD35A   FCB  123    ; 0.0842          63
LD35A   FCB  123    ; 0.0842          69
LD35A   FCB  123    ; 0.0842          75
LD35A   FCB  123    ; 0.0842          81
LD35A   FCB  123    ; 0.0842          88
LD35A   FCB  123    ; 0.0842          94
LD35A   FCB  123    ; 0.0842         100
        ;-------------------------------------------
        ; 40 Air Flow, (gms/sec)
        ;               RATIO       %EGR
        ;-------------------------------------------
LD36B   FCB  135    ; 0.0924           0
LD36B   FCB  135    ; 0.0924           6
LD36B   FCB  132    ; 0.0903          13
LD36B   FCB  128    ; 0.0876          19
LD36B   FCB  123    ; 0.0842          25
LD36B   FCB  123    ; 0.0842          31
LD36B   FCB  123    ; 0.0842          38
LD36B   FCB  123    ; 0.0842          44
LD36B   FCB  123    ; 0.0842          50
LD36B   FCB  123    ; 0.0842          56
LD36B   FCB  123    ; 0.0842          63
LD36B   FCB  123    ; 0.0842          69
LD36B   FCB  123    ; 0.0842          75
LD36B   FCB  123    ; 0.0842          81
LD36B   FCB  123    ; 0.0842          88
LD36B   FCB  123    ; 0.0842          94
LD36B   FCB  123    ; 0.0842         100
        ;-------------------------------------------


        ;-------------------------------------------
        ; MAIN FUEL (VE) Vs. MAP Vs. RPM
        ;
        ; MAIN FUEL PREDICITIONS vs MAP vs RPM, (FL1)
        ; TYPE $42 L05 ASDZ
        ; 06-02-1997 Dissassemby of ASDZ, Blocks = 9
        ;
        ; TBL = %VE x 2.56 0
```

```
        ;-----------------------------------------
        ORG $037C   ;
                    ;
LD37C:  FCB     0   ; COL           MIN MAP, MAP/2
        FCB     16  ; ROW           MIN RPM, 400 RPM
        FCB     8   ; RPM BP'S/ROW  MAP VAL
                    ;
        ;-----------------------------------------
        ; 20 MAP
        ;               %VE         RPM
        ;-----------------------------------------
LD37F   FCB  0      ;  0.0           400
LD37F   FCB  5      ;  2.0           800
LD37F   FCB  15     ;  5.9          1200
LD37F   FCB  25     ;  9.8          1600
LD37F   FCB  36     ; 14.1          2000
LD37F   FCB  46     ; 18.0          2400
LD37F   FCB  50     ; 19.5          2800
LD37F   FCB  55     ; 21.5          3200
        ;-----------------------------------------
        ; 30 MAP
        ;               %VE         RPM
        ;-----------------------------------------
LD387   FCB  28     ; 10.9           400
LD387   FCB  58     ; 22.7           800
LD387   FCB  79     ; 30.9          1200
LD387   FCB  96     ; 37.5          1600
LD387   FCB  107    ; 41.8          2000
LD387   FCB  109    ; 42.6          2400
LD387   FCB  106    ; 41.4          2800
LD387   FCB  90     ; 35.2          3200
LD38F   FCB  31     ; 12.1           400
LD38F   FCB  64     ; 25.0           800
LD38F   FCB  90     ; 35.2          1200
LD38F   FCB  103    ; 40.2          1600
LD38F   FCB  112    ; 43.8          2000
LD38F   FCB  114    ; 44.5          2400
LD38F   FCB  118    ; 46.1          2800
LD38F   FCB  116    ; 45.3          3200
        ;-----------------------------------------
        ; 50 MAP
        ;               %VE         RPM
        ;-----------------------------------------
LD397   FCB  59     ; 23.0           400
LD397   FCB  75     ; 29.3           800
LD397   FCB  97     ; 37.9          1200
LD397   FCB  109    ; 42.6          1600
LD397   FCB  117    ; 45.7          2000
LD397   FCB  122    ; 47.7          2400
LD397   FCB  125    ; 48.8          2800
LD397   FCB  127    ; 49.6          3200
        ;-----------------------------------------
        ; 60 MAP
        ;               %VE         RPM
        ;-----------------------------------------
LD39F   FCB  79     ; 30.9           400
LD39F   FCB  92     ; 35.9           800
LD39F   FCB  105    ; 41.0          1200
LD39F   FCB  116    ; 45.3          1600
LD39F   FCB  124    ; 48.4          2000
LD39F   FCB  127    ; 49.6          2400
LD39F   FCB  135    ; 52.7          2800
LD39F   FCB  137    ; 53.5          3200
        ;-----------------------------------------
        ; 70 MAP
        ;               %VE         RPM
```

```
        ;-------------------------------------------
LD3A7   FCB  97     ; 37.9           400
LD3A7   FCB  100    ; 39.1           800
LD3A7   FCB  108    ; 42.2          1200
LD3A7   FCB  120    ; 46.9          1600
LD3A7   FCB  126    ; 49.2          2000
LD3A7   FCB  136    ; 53.1          2400
LD3A7   FCB  140    ; 54.7          2800
LD3A7   FCB  137    ; 53.5          3200
        ;-------------------------------------------
        ; 80 MAP
        ;               %VE         RPM
        ;-------------------------------------------
LD3AF   FCB  103    ; 40.2           400
LD3AF   FCB  106    ; 41.4           800
LD3AF   FCB  113    ; 44.1          1200
LD3AF   FCB  123    ; 48.0          1600
LD3AF   FCB  131    ; 51.2          2000
LD3AF   FCB  135    ; 52.7          2400
LD3AF   FCB  140    ; 54.7          2800
LD3AF   FCB  141    ; 55.1          3200
        ;-------------------------------------------
        ; 90 MAP
        ;               %VE         RPM
        ;-------------------------------------------
LD3B7   FCB  110    ; 43.0           400
LD3B7   FCB  115    ; 44.9           800
LD3B7   FCB  122    ; 47.7          1200
LD3B7   FCB  125    ; 48.8          1600
LD3B7   FCB  133    ; 52.0          2000
LD3B7   FCB  143    ; 55.9          2400
LD3B7   FCB  144    ; 56.3          2800
LD3B7   FCB  152    ; 59.4          3200
        ;-------------------------------------------
        ; 100 MAP
        ;               %VE         RPM
        ;-------------------------------------------
LD3BF   FCB  120    ; 46.9           400
LD3BF   FCB  120    ; 46.9           800
LD3BF   FCB  124    ; 48.4          1200
LD3BF   FCB  127    ; 49.6          1600
LD3BF   FCB  128    ; 50.0          2000
LD3BF   FCB  148    ; 57.8          2400
LD3BF   FCB  159    ; 62.1          2800
LD3BF   FCB  160    ; 62.5          3200
        ;-------------------------------------------


        *===========================================
        * FL2, MAIN FUEL TBL vs RPM, VE2
        *
        * 06-02-1997  Dissassemby of ASDZ  Lines= 17
        *
        *  TBL =  2.56  * %VE
        *===========================================
        ORG  $03C7  ;    %VE             RPM
                    ;-------------------------------
L03C7   FCB  64     ;      25.0            0
L03C8   FCB  100    ;      39.1          400
L03C9   FCB  100    ;      39.1          800
L03CA   FCB  100    ;      39.1         1200
L03CB   FCB  100    ;      39.1         1600
L03CC   FCB  100    ;      39.1         2000
L03CD   FCB  100    ;      39.1         2400
L03CE   FCB  100    ;      39.1         2800
L03CF   FCB  100    ;      39.1         3200
```

```
L03D0   FCB  105    ;      41.0         3600
L03D1   FCB  100    ;      39.1         4000
L03D2   FCB  95     ;      37.1         4400
L03D3   FCB  95     ;      37.1         4800
L03D4   FCB  95     ;      37.1         5200
L03D5   FCB  95     ;      37.1         5600
L03D6   FCB  95     ;      37.1         6000
L03D7   FCB  95     ;      37.1         6400
        ;---------------------------------------------


        ;---------------------------------------------
        ; INV COOL TBL, (1K P/U)
        ; UESD FOR BPW CALC
        ;
        ; TBL = 50,000/DEG K
        ;---------------------------------------------
        ORG $03D8   ; DEG K     DEG C   DEG F
                    ;-----------------------------------
LD3D8   FCB  107    ; 155     ; 423K      HOT
LD3D9   FCB  126    ; 122     ; 410       138.0c  280f
LD3DA   FCB  132    ; 132     ; 379       107.0   225
LD3DB   FCB  137    ; 137     ; 365        91.0   196
LD3DC   FCB  142    ; 142     ; 352        80.0   176
LD3DD   FCB  145    ; 145     ; 345        71.0   160
LD3DE   FCB  149    ; 149     ; 336        63.0   145
LD3DF   FCB  152    ; 152     ; 329        56.0   133
LD3E0   FCB  155    ; 155     ; 323        49.3   121
LD3E1   FCB  158    ; 158     ; 317        43.3   110
LD3E2   FCB  161    ; 161     ; 311        37.0    99
LD3E3   FCB  165    ; 165     ; 303        30.5    87
LD3E4   FCB  169    ; 169     ; 296        23.5    74
LD3E5   FCB  173    ; 173     ; 289        15.5    60
LD3E6   FCB  179    ; 179     ; 279         6.0    43
LD3E7   FCB  189    ; 189     ; 265        -8.5    17
LD3E8   FCB  211    ; 211     ; 237K        COLD
        ;---------------------------------------------


        ;---------------------------------------------
        ; VOLTAGE COMP vs BATTERY
        ; ECM TYPE $42,  (fuel)
        ;
        : TBL = MULT * 128
        ;---------------------------------------------
        ORG $03E9    ;               battery
                     ; mult           VDC
                     ;-----------------------------------
LD3E9   FCB 128      ; 1.000          0.0
LD3EA   FCB 128      ; 1.000          1.6
LD3EB   FCB 160      ; 1.250          3.2
LD3EC   FCB 160      ; 1.250          4.8
LD3ED   FCB 147      ; 1.148          6.4
LD3EE   FCB 147      ; 1.148          8.0
LD3EF   FCB 141      ; 1.100          9.6
LD3F0   FCB 141      ; 1.100         11.2
LD3F1   FCB 134      ; 1.047         12.8
LD3F2   FCB 128      ; 1.000         14.4
LD3F3   FCB 126      ; 0.984         16.0
LD3F4   FCB 122      ; 0.819         17.6
LD3F5   FCB 120      ; 0.938         19.2
LD3F6   FCB 118      ; 0.938         20.8
LD3F7   FCB 116      ; 0.906         22.4
LD3F8   FCB 114      ; 0.891         24.0
LD3F9   FCB 112      ; 0.875         25.5
```

```
        ;---------------------------------------------


        ;---------------------------------------------
        ; Decel COOLANT FACTOR vs COOLANT TEMP
        ;
        ;
        ;   Table = factor * 32
        ;---------------------------------------------
LD3FA   FCB 4       ; 5 line table
                    ;
                    ;  MULT         Deg c
                    ;-----------------------------------
LD3FB   FCB 32      ; 1.00          COLD
LD3FC   FCB 56      ; 1.75          24.0
LD3FD   FCB 64      ; 2.00          49.0
LD3FE   FCB 64      ; 2.00          80.5
LD3FF   FCB 64      ; 2.00          HOT
        ;---------------------------------------------


        ;---------------------------------------------
        ; COLD START CRANK CORR vs %RPM
        ;
        ; Stretches BPW if eng cold & NOT RUNNING based on
        ; Pct of engine running RPM
        ;
        ; TBL = FACTOR * 255
        ;---------------------------------------------
LD400:  FCB 10      ; 11 LINE TBL
                    ;
                    ; MULT           %RPM
                    ;-----------------------------------
LD401   FCB 255     ; 0.996           0
LD402   FCB 255     ; 0.996          10
LD403   FCB 255     ; 0.996          20
LD404   FCB 255     ; 0.996          30
LD405   FCB 255     ; 0.996          40
LD406   FCB 255     ; 0.996          50
LD407   FCB 255     ; 0.996          60
LD408   FCB 255     ; 0.996          70
LD409   FCB 243     ; 0.949          80
LD40A   FCB 230     ; 0.898          90
LD40B   FCB 218     ; 0.852         100
        ;-----------------------------------------------


        ;-----------------------------------------------
        ; ACCEL ENRICH vs COOLANT
        ;
        ;  Dissassemby of ASDZ, LINES =  17
        ;  04-20-1994, 16:58:25
        ;
        ;  TBL =  32  * FACTOR
        ;-----------------------------------------------
         ORG $040C  ;
                    ;  FACTOR         COOL Deg c
                    ;-----------------------------------
LD40C   FCB  160    ;   5.0            COLD
LD40D   FCB  160    ;   5.0            -8.5
LD40E   FCB  144    ;   4.5             6.0     17
LD40F   FCB  112    ;   3.5            15.5     43
LD410   FCB  96     ;   3.0            23.5     60
LD411   FCB  96     ;   3.0            30.5     74
LD412   FCB  80     ;   2.5            37.0     87
LD413   FCB  75     ;   2.3            43.3     99
```

```
LD414   FCB  64     ;   2.0            49.3    110
LD415   FCB  46     ;   1.4            56.0    121
LD416   FCB  36     ;   1.1            63.0    133
LD417   FCB  32     ;   1.0            71.0    145
LD418   FCB  28     ;   0.9            80.0    176
LD419   FCB  24    ;   0.8           91.0    196
LD41A   FCB  24    ;   0.8          107.0    225
LD41B   FCB  24    ;   0.8          138.5
LD41C   FCB  24    ;   0.8          HOT
        ;-----------------------------------------


        *=========================================
        * COLD ENGINE AIR/FUEL vs VACUUM
        * (OPN LP IF NOT CRANK)
        *
        *  SUM VAC AFR (LD41D) + COOL AFR (LD45A)
        *
        *   TABLE = 10 * A/F RATIO
        *=========================================
LD41D:  FCB 8       ; 9 LINE TABLE
                    ;
                    ; AFR       VACUUM  Kpa
                    ;-----------------------------------
LD41E   FCB 35      ; 3.5       80
LD41F   FCB 33      ; 3.3       70
LD420   FCB 32      ; 3.2       60
LD421   FCB 30      ; 3.0       50
LD422   FCB 25      ; 2.5       40
LD423   FCB 20      ; 2.0       30
LD424   FCB 15      ; 1.5       20
LD425   FCB 10      ; 1.0       10
LD426   FCB 0       ; 0          0
        *=========================================


        *=========================================
        * TIME OUT AFR vs COOLANT
        * (AFR STARTUP (CHOKE))
        *
        * AFTER START UP AFR
        * ICREASES WITH TIME, SIMULATING A CHOKE.
        *
        * (TBL VALUED IS SUB'ED FROM CURRENT AFR,
        *   --> SMALL NUM IS LEAN)
        *
        *   TBL =  10  * AFR
        *=========================================
        ORG $0427   ;
                    ; AFR       DEG c COOL
                    ;-----------------------------------
LD427   FCB 59      ; 5.9       COLD
LD428   FCB 45      ; 4.5        -7.0
LD429   FCB 37      ; 3.7         6.5
LD42A   FCB 32      ; 3.2        16.0
LD42B   FCB 27      ; 2.7        24.0
LD42C   FCB 27      ; 2.7        31.0
LD42D   FCB 27      ; 2.7        37.3
LD42E   FCB 27      ; 2.7        43.7
LD42F   FCB 27      ; 2.7        49.7
LD430   FCB 27      ; 2.7        56.5
LD431   FCB 27      ; 2.7        63.5
LD432   FCB 27      ; 2.7        71.5
LD433   FCB 22      ; 2.2        80.5
LD434   FCB 22      ; 2.2        92.0
LD435   FCB 22      ; 2.2       108.5
```

```
LD436   FCB 22      ; 2.2       138.5
LD437   FCB 22      ; 2.2       HOT
        *===========================================


        *===========================================
        * TIME OUT DECAY MULT vs COOL
        * (CHOKE AFR MULT Vs. COOL)
        *
        * AFTER START UP AFR,
        * INCREASES WITH TIME, SIMULATING A  CHOKE.
        *
        * TABLE = FACTOR * 256
        *===========================================
                    ;
                    ; MULT    Deg c COOL
                    ;-----------------------------------
LD438   FCB 243     ; 0.949       COLD
LD439   FCB 248     ; 0.969       -7.0
LD43A   FCB 251     ; 0.980        6.5
LD43B   FCB 251     ; 0.980       16.0
LD43C   FCB 243     ; 0.949       24.0
LD43D   FCB 243     ; 0.949       31.0
LD43E   FCB 251     ; 0.980       37.3
LD43F   FCB 251     ; 0.980       43.7
LD440   FCB 251     ; 0.980       49.7
LD441   FCB 251     ; 0.980       56.5
LD442   FCB 251     ; 0.980       63.5
LD443   FCB 251     ; 0.980       71.5
LD444   FCB 251     ; 0.980       80.5
LD445   FCB 243     ; 0.949       92.0
LD446   FCB 243     ; 0.949      108.5
LD447   FCB 243     ; 0.949      138.5
LD448   FCB 243     ; 0.949      HOT
        *===========================================


        *===========================================
        * CRANK AFR vs COOLANT
        *
        * AFR DURING CRANK
        *
        *  TBL =  10  * AFR
        *===========================================
                    ;
                    ; AFR       Deg c COOL
                    ;-----------------------------------
LD449   FCB 7       ;  0.7      COLD
LD44A   FCB 22      ;  2.2       -7.0
LD44B   FCB 30      ;  3.0        6.5
LD44C   FCB 35      ;  3.5       16.0
LD44D   FCB 42      ;  4.2       24.0
LD44E   FCB 49      ;  4.9       31.0
LD44F   FCB 54      ;  5.4       37.3
LD450   FCB 60      ;  6.0       43.7
LD451   FCB 65      ;  6.5       49.7
LD452   FCB 75      ;  7.5       56.5
LD453   FCB 85      ;  8.5       63.5
LD454   FCB 95      ;  9.5       71.5
LD455   FCB 100     ; 10.0       80.5
LD456   FCB 100     ; 10.0       92.0
LD457   FCB 100     ; 10.0      108.5
LD458   FCB 100     ; 10.0      138.5
LD459   FCB 45      ;  4.5      HOT
        *===========================================
```

```
        *===========================================
        * COLD ENG TEMP AFR vs COOLANT
        * (OPN LP IF NOT CRANK & CHOKE)
        *  OPEN LOOP AFR Vs. COOL
        *
        *  ASDZ, 17 LINES
        *
        *  SUM VAC AFR (LD41D) + COOL AFR (LD45A)
        *
        *  TBL = AFR * 10
        *===========================================
                    ;
                    ; AFR       Deg c COOL
                    ;--------------------------------
LD45A   FCB 72      ;  7.2      COLD
LD45B   FCB 93      ;  9.3       -7.0
LD45C   FCB 104     ; 10.4        6.5
LD45D   FCB 115     ; 11.5       16.0
LD45E   FCB 120     ; 12.0       24.0
LD45F   FCB 125     ; 12.5       31.0
LD460   FCB 130     ; 13.0       37.3
LD461   FCB 130     ; 13.0       43.7
LD462   FCB 130     ; 13.0       49.7
LD463   FCB 130     ; 13.0       56.5
LD464   FCB 130     ; 13.0       63.5
LD465   FCB 130     ; 13.0       71.5
LD466   FCB 130     ; 13.0       80.5
LD467   FCB 130     ; 13.0       92.0
LD468   FCB 130     ; 13.0      108.5
LD469   FCB 125     ; 12.5      138.5
LD46A   FCB 125     ; 12.5       HOT
        *===========================================

        ;-------------------------------------------
        ; ASYNC MULT vs RPM TABLE
        ;
        ;
        ;   THIS MULT IS USED TO CONVERT  SMALL PW
        ;   (PW/CYL)TO ASYNC (PW/12.5 Msec) INJ.
        ;   FOR ASYNC INJECTIONS
        ;
        ;
        ; ASYNC IS BOTH INJECTORS, SYMO
        ; SYNC  IS ATRNATING INJECTIONS
        ;
        ; FACTOR = (NUM CYLS/2) * (RPM/60) * (0.0125/2)
        ; .0125 = PULSE PERIOD, (80 Hz)
        ;
        ;
        ; TBL = MULT * 64
        ;-------------------------------------------
LD46B:  FCB 8       ; 9 LINE TABLE
                    ;
                    ; MULT          RPM
                    ;--------------------------------
LD46C   FCB 0       ; 0.000           0
LD46D   FCB 21      ; 0.328         800
LD46E   FCB 43      ; 0.672        1600
LD46F   FCB 64      ; 1.000        2400
LD470   FCB 85      ; 1.328        3200
LD471   FCB 107     ; 1.672        4000
LD472   FCB 128     ; 2.000        4800
LD473   FCB 149     ; 2.328        5600
LD474   FCB 171     ; 2.672        6400
        ;-------------------------------------------
```

```
        ;---------------------------------------------
        ; BPW CONST MULT vs BARO
        ;
        ; TBL = MULT * 128
        ;---------------------------------------------
                    ;
                    ; MULT      BARO Kpa
                    ;-------------------
LD475   FCB 136     ; 1.063     75
LD476   FCB 131     ; 1.023     85
LD477   FCB 128     ; 1.000     95
LD478   FCB 128     ; 1.000    105
        ;---------------------------------------------


        ;---------------------------------------------
        ; PWR ENRICH TPS MULT vs BARO
        ;
        ; (MULT CURRENT TPS * THESE MULTIPLIERS)
        ;
        ; ECM 1227747, TYPE $42
        ;  ASDZ/
        ;
        ; TABLE = FACTOR * 128
        ;---------------------------------------------
        ORG $0479   ; FACTOR    BARO Kpa
                    ;-----------------------------------
LD479   FCB 187     ; 1.46      75
LD47A   FCB 187     ; 1.99      85
LD47B   FCB 255     ; 1.99      95
LD47C   FCB 255     ; 1.99     105
        ;---------------------------------------------


        *=============================================
        * TPS vs RPM THRESH FOR WOT ENABLE, ($42)
        *
        * ASDZ, ECM 1227747 TYPE $42, 9 LINE TBL
        *
        *
        *=============================================
        ORG $047D   ;
                    ; VDC       RPM
                    ;-----------------------------------
LD47D   FCB 64      ; 1.30        0
LD47E   FCB 64      ; 1.30      400
LD47F   FCB 154     ; 3.08      800
LD480   FCB 154     ; 3.08     1200
LD481   FCB 140     ; 2.80     1600
LD482   FCB 128     ; 2.50     2000
LD483   FCB 128     ; 2.50     2400
LD484   FCB 102     ; 2.04     2800
LD485   FCB 102     ; 2.04     3200
        *=============================================


        *=============================================
        * WOT FUEL AFR Vs. RPM
        *
        * ASDZ, 9 LINES
        *
        *  TBL = AFR * 10
        *=============================================
                    ;
```

```
                ; AFR       RPM
                ;-----------------------------------
LD486   FCB 136 ; 13.6        0
LD487   FCB 136 ; 13.6      400
LD488   FCB 136 ; 13.6      800
LD489   FCB 132 ; 13.2     1200
LD48A   FCB 127 ; 12.7     1600
LD48B   FCB 127 ; 12.7     2000
LD48C   FCB 127 ; 12.7     2400
LD48D   FCB 127 ; 12.7     2800
LD48E   FCB 132 ; 13.2     3200
        *=========================================


        ;-----------------------------------------
        ; INTEGRATOR DELAY vs AIR FLOW
        ; 5 LINE TBL, USE AIR FLOW 0-64 BIN
        ;
        ; MULT x INT DELAY MULT (Vs. Slo o2) * LD4CC
        ;
        ;TBL = Sec's * 40
        ;    = msec * 0.04
        ;-----------------------------------------
        ORG $048F   ; msec's        AIR FLOW
                    ;-----------------------------------
 LD48F   FCB 23     ; 575              0
 LD490   FCB 14     ; 350             16
 LD491   FCB 10     ; 259             32
 LD492   FCB 7      ; 175             48
 LD493   FCB 5      ; 125             64
        ;-----------------------------------------


        ;-----------------------------------------
        ; MEAN Rich/Lean  THRESOLD FOR UNFILTERED o2
        ; AS A FUNCTION OF FLOW
        ;
        ; TBL = 230.4 * VDC
        ;-----------------------------------------
                    ;
                    ; mvdc      AIR FLOW
                    ;-----------------------------------
LD494   FCB 97      ; 422        0
LD495   FCB 93      ; 404       16
LD496   FCB 90      ; 391       32
LD497   FCB 90      ; 391       48
LD498   FCB 90      ; 391       64
        ;-----------------------------------------


        ;-----------------------------------------
        ; RICH o2 THRESHOLD as FUNCT OF AIR FLOW
        ;
        ; TBL = 230.4 * VDC
        ;-----------------------------------------
                    ;
                    ; mvdc      AIR FLOW
                    ;-----------------------------------
LD499   FCB 109     ; 474       0
LD49A   FCB 100     ; 435       16
LD49B   FCB 90      ; 391       32
LD49C   FCB 90      ; 391       48
LD49D   FCB 90      ; 391       64
        ;-----------------------------------------

        ;-----------------------------------------
```

```
        ; LEAN o2 THRES as FUNCT OF AIR FLOW
        ;
        ; TBL = 230.4 * VDC
        ;-------------------------------------------
                    ;
                    ; mvdc      AIR FLOW
                    ;---------------------------------
LD49E   FCB 83      ; 157       0
LD49F   FCB 86      ; 374       16
LD4A0   FCB 90      ; 391       32
LD4A1   FCB 90      ; 391       48
LD4A2   FCB 90      ; 391       64
        ;-------------------------------------------

        ;-------------------------------------------
        ; SLOW o2 FILTER TIME CONSTANT vs AIR FLOW
        ; ASDZ.BIN, (TYPE $42)
        ;
        ; TBL = CONST * 256
        ;-------------------------------------------
        ORG $04A3   ; CONST         AIR FLOW
                    ;---------------------------------
LD4A3   FCB 7       ; 0.027           0
LD4A4   FCB 10      ; 0.039          16
LD4A5   FCB 16      ; 0.063          32
LD4A6   FCB 22      ; 0.086          48
LD4A7   FCB 26      ; 0.102          64
        ;-------------------------------------------

        ;-------------------------------------------
        ; PROPORTIONIAL VALUE vs SLO o2 ERROR
        ; FOR SELECTING BIN VAL TO ADJUST THE INTEGRATOR
        ;
        ; (Apply LD2FC idle correction if in idle)
        ;
        ; TBL = BIN * 1
        ;-------------------------------------------
        ORG $04A8   ;   BIN         ERR, BIN
                    ;---------------------------------
LD4A8   FCB 12      ; 12             0
LD4A9   FCB 12      ; 12             8
LD4AA   FCB 12      ; 12            16
LD4AB   FCB 12      ; 12            24
LD4AC   FCB 13      ; 13            32
LD4AD   FCB 16      ; 16            40
LD4AE   FCB 16      ; 16            48
LD4AF   FCB 18      ; 18            56
LD4B0   FCB 22      ; 22            64
LD4B1   FCB 28      ; 28            72
LD4B2   FCB 32      ; 32            80
LD4B3   FCB 36      ; 36            88
LD4B4   FCB 40      ; 40            96
        ;-------------------------------------------


        ;-------------------------------------------
        ; PROPORTIONIAL TERM DURATION o2 ERROR
        ; FOR SELECTING SEC'S TO ALLOW ADJUST TO TAKE AFFECT
        ;
        ; (Skip if in idle conditions, use LD2F8)
        ;
        ; TBL = SEC'S * 40
        ;       msec * 0.04
        ;-------------------------------------------
                    ; msec's       o2 ERROR
                    ;---------------------------------
```

```
LD4B5   FCB 1       ;   25              0
LD4B6   FCB 2       ;   50              8
LD4B7   FCB 3       ;   70              16
LD4B8   FCB 3       ;   70              24
LD4B9   FCB 4       ;  100              32
LD4BA   FCB 5       ;  139              40
LD4BB   FCB 8       ;  200              48
LD4BC   FCB 12      ;  300              56
LD4BD   FCB 24      ;  600              64
LD4BE   FCB 48      ; 1200              72
LD4BF   FCB 96      ; 2400              80
LD4C0   FCB 240     ; 4800              88
LD4C1   FCB 240     ; 4800              96
        ;-------------------------------------------


        ;-------------------------------------------
        ; PROPORTIONIAL DURATION OFFSET TBL vs AIR FLOW
        ;
        ; (Added to Prop Vs. o2 ERR)
        ;
        ; TBL = SEC'S * 40
        ;       msec * 0.04
        ;-------------------------------------------
                    ;  msec     AIR FLOW gms/SEC
                    ;---------------------------------
LD4C2   FCB 0       ;   0            0
LD4C3   FCB 0       ;   0           16
LD4C4   FCB 1       ;  25           32
LD4C5   FCB 1       ;  25           48
LD4C6   FCB 0       ;   0           64
        ;-------------------------------------------


        ;-------------------------------------------
        ; PROPORTIONIAL GAIN FLOW FACTOR vs AIR FLOW
        ;
        ; Used to modify prOp gain count.
        ;
        ; (Skip if in idle conditions, use LD2F9)
        ;
        ; TBL = MULT * 256
        ;-------------------------------------------
        ORG $04C7   ; MULT      AIR FLOW gms/SEC
                    ;---------------------------------
LD4C7   FCB 35      ; 0.137         0
LD4C8   FCB 45      ; 0.176         16
LD4C9   FCB 70      ; 0.273         32
LD4CA   FCB 80      ; 0.313         48
LD4CB   FCB 96      ; 0.375         64
        ;-------------------------------------------


        ;-------------------------------------------
        ; INT DELAY MULT vs SLOW O2 ERROR
        ;
        ; INTIGRATOR DELAY AS FUNCT OF SLOW o2
        ;
        ; MULT x INT DELAY MULT (Vs. Slo o2) * LD48F
        ;
        ; TBL = FACTOR * 256
        ;-------------------------------------------
                    ; MULT      o2 ERROR
                    ;---------------------------------
LD4CC   FCB 255     ; 0.996             0
```

```
LD4CD   FCB 255     ; 0.996             8
LD4CE   FCB 255     ; 0.996             16
LD4CF   FCB 224     ; 0.875             24
LD4D0   FCB 192     ; 0.750             32
LD4D1   FCB 160     ; 0.625             40
LD4D2   FCB 112     ; 0.438             48
LD4D3   FCB 96      ; 0.375             56
LD4D4   FCB 96      ; 0.375             64
LD4D5   FCB 112     ; 0.438             72
LD4D6   FCB 160     ; 0.625             80
LD4D7   FCB 192     ; 0.750             88
LD4D8   FCB 192     ; 0.750             96
        ;-------------------------------------------


        ;-------------------------------------------
        ; O2 SENS VOLTAGE BIAS FOR COLD OP'S
        ;
        ; TBL = VDC * 230.4
        ;-------------------------------------------
LD4D9:  FCB 192     ; UPPER TBL LIMT
                    ;
                    ; mvdc          Deg c
                    ;---------------------------------
LD4DA   FCB 0       ; 000           cold
LD4DB   FCB 0       ; 000           -7.0
LD4DC   FCB 0       ; 000           6.5
LD4DD   FCB 0       ; 000           16.0
LD4DE   FCB 4       ; 017           24.0
LD4DF   FCB 4       ; 017           31.0
LD4E0   FCB 4       ; 017           37.3
LD4E1   FCB 4       ; 017           43.7
LD4E2   FCB 4       ; 017           49.7
LD4E3   FCB 4       ; 017           56.5
LD4E4   FCB 4       ; 017           63.5
LD4E5   FCB 4       ; 017           71.5
LD4E6   FCB 0       ; 000           80.5
        ;-------------------------------------------

        ORG $04E7

        ;===========================================
        ;  ALDL XMIT TABLE OR ADDRESSE'S
        ; 127747 ECM
        ;
        ; DATA PIN: Read data on PIN "E" of ALDL Connector
        ;
        ; BAUD RATE:  160 Baud
        ;             Open      - 20 Bytes
        ;             10k       - 20 Bytes
        ;             Shorted   - 20 Bytes
        ;
        ;   ENGINE   RPO    VIN     Platform
        ;   _____________________________________________
        ;   4.3L TBI  LB4,  Z       89 TRUCKS
        ;   4.3L TBI  LB4,  Z       90 91 S/T TRUCKS w/auto  TRANS
        ;   4.3L TBI  LB4,  Z       90 C/K/G/M/L/R/V TRUCKS
        ;   4.3L TBI  LU2,  B       90 TRUCKS
        ;
        ;   5.0L TBI  L03,  H       89,90 TRUCKS
        ;
        ;   5.7L TBI  L05,  K       89 TRUCKS
        ;   5.7L TBI  L05,  K       90 TRUCKS
        ;
        ;   6.0L TBI  LS0,  P       89 TRUCKS
        ;
```

```
        ;   7.4L TBI  L19,  N       89 TRUCKS
3       ;   7.4L TBI  L19,  N       90 TRUCKS
        ;   7.4L TBI  L19,  N       91 TRUCKS
        ;==================================
LD4E7   FDB $D002   ; 1.  EPROM ID LSB
LD4E9   FDB $D003   ; 2.  EPROM ID MSB
                    ;----------------------------
LD4EB   FDB $00FD   ; 3.  CURRENT IAC POSIT, (0-255)
                    ;     N = COUNTS
                    ;----------------------------
LD4ED   FDB $0025   ; 4.  COOLANT
                    ;     see table 1
                    ;----------------------------
LD4EF   FDB $0034   ; 5.  MPH,
                    ;     (MPH/1)
                    ;----------------------------
LD4F1   FDB $002D   ; 6.  MAP, (A/D, 0-255)
                    ;     VOLTS = N * .0196
                    ;----------------------------
LD4F3   FDB $001C   ; 7.  RPM/25
                    ;     RPM = N * 25
                    ;----------------------------
LD4F5   FDB $0048   ; 8.  TPS (A/D, 0-255)
                    ;     VOLTS = N * .0196
                    ;----------------------------
LD4F7   FDB $00A4   ; 9.  INTIGRATOR, (0-255)
                    ;
                    ;----------------------------
LD4F9   FDB $003E   ; 10. o2 (A/D),  mvdc = 0.2304 * A/D VAL
                    ;
                    ;----------------------------
LD4FB   FDB $00E0   ; 11. ERROR flag 1
                    ;
                    ; b7    ERROR CODE 12   NO DRP
                    ; b6    ERROR CODE 13   OXYGEN SENSOR
                    ; b5    ERROR CODE 13   OXYGEN SENSOR
                    : b4    ERROR CODE 15   COOLANT SENSOR LOW
                    ;
                    ; b3    ERROR CODE 21   TPS HIGH
                    ; b2    ERROR CODE 22   TPS LOW
                    ; b1    ERROR CODE 22   TPS LOW
                    : b0    ERROR CODE 24   Vss
                    ;----------------------------
LD4FD   FDB $00E1   ; 12. ERROR flag 2
                    ;
                    ; b7    ERROR CODE 25   not used
                    ; b6    ERROR CODE 31   GOVERNOR FAIL
                    ; b5    ERROR CODE 32   EGR FAILURE
                    : b4    ERROR CODE 33   MAP SENSOR HIGH
                    ;
                    ; b3    ERROR CODE 34   MAP SENSOR LOW
                    ; b2    ERROR CODE 35   not used
                    ; b1    ERROR CODE 41   not used
                    : b0    ERROR CODE 42   EST MONITOR ERROR
                    ;----------------------------
LD4FF   FDB $00E2   ; 13. ERROR flg 3
                    ;
                    ; b7    ERROR CODE 43   KNOCK SPARK CONTROL FAILURE
                    ; b6    ERROR CODE 44   o2 LEAN
                    ; b5    ERROR CODE 45   o2 RICH
                    : b4    ERROR CODE 51   PROM ERROR
                    ;
                    ; b3    ERROR CODE 55   ADU ERROR
                    ; b2    ERROR CODE 54   FUEL PUMP RELAY FAILURE
                    ; b1    ERROR CODE 53   not used
                    : b0    ERROR CODE 52   CAL PACK MISSING
```

```
                    ;-------------------------------------
LD501   FDB $000E   ; 14. A/F MODE Word Flag 1, (FLAG),
                    ;
                    ; b7    CLOSED LOOP FLAG, 1 = CLOSED LOOP
                    ; b6    RICH/LEAN FLAG,   1 = RICH
                    ; b5    OLD HIGH GEAR FLAG, 0 = HIGH GEAR LAST TIME
                    : b4    ASYNC FUEL FLAG
                    ;
                    ; b3    4-3 DOWNSHIFT FOR TCC UNLOCK
                    ; b2    LOW BATTERY,  1 = LOW
                    ; b1    BLM ENABLE FLAG,  1 = ENABLE STORE
                    : b0    CLEAR FLOOD FLAG, 1 = CRANKED IN C/FLOOD
                    ;-------------------------------------
LD503   FDB $0045   ; 15    BATTERY VOLTS, (A/D, 0-255) Vbatt/10
                    ;-------------------------------------
LD505   FDB $0801   ; 16.   MCU2 I/O
                    ;
                    ; b7     AIR CONDITIONER, 0 = A/C REQUESTED
                    ; b6     frtj (not used),
                    ; b5     HIGH GEAR, 0 = SWITCH OPEN
                    ; b4     PARK NEUTRAL, 0 = DRIVE
                    ;
                    ; b3     TCC, 1 = TCC LOCKED
                    ; b2     OF3 A/C, 1 = A/C DISABLED
                    ; b2     OF3 A/C, 1 = A/C DISABLED
                      b0     AIR SWITCH, 1 = SOLENOID ENGAGED
                    ;-------------------------------------
LD507   FDB $0073   ; 17.   OLD PA3
                    ;       N = COUNTS
                    ;-------------------------------------
LD509   FDB $00A3   ; 18.   BLM, (BLM/1
                    ;
                    ;-------------------------------------
LD50B   FDB $00BA   ; 19.   o2 CROSS COUNTS
                    ;       N = COUNTS
                    ;-------------------------------------

        *=========================================
        ;
        ;    TABLE 1 --- COOLANT TEMPERATURE
        ;
        ;
        ;     A/D            DEGREES
        ;    COUNTS             C
        ;    -------          -------
        ;      255             -40
        ;      251             -30
        ;      250             -25
        ;      247             -20
        ;      245             -15
        ;      241             -10
        ;      237             - 5
        ;      231               0
        ;      225               5
        ;      218              10
        ;      209              15
        ;      199              20
        ;      189              25
        ;      177              30
        ;      165              35
        ;      152              40
        ;      139              45
        ;      126              50
        ;      114              55
        ;      102              60
        ;      92               65
```

```
;      81              70
;      72              75
;      64              80
;      56              85
;      50              90
;      44              95
;      39             100
;      34             105
;      30             110
;      26             115
;      23             120
;      21             125
;      18             130
;      16             135
;      14             140
;      13             145
;      12             150
;       0             200
;-----------------------------------------------


;-----------------------------------------------
; DIAGNOSTIC PRAM MASK'S
;
;   0 = disable error recognition
;   1 = Enable error recognition
;
;-----------------------------------------------

              ;--------------------------------------
LD50D:  FCB $FC ; Mask for MALFFLG1,  1111 1100b
              ;
              ;  bit 0   code 24, VSS
              ;  bit 1   code 23, MAT Sensor lo temp, (NOT USED)
              ;  bit 2   code 22, TPS lo
              ;  bit 3   code 21, TPS hi
              ;
              ;  bit 4   code 15, Coolant sensor lo
              ;  bit 5   code 14, Coolant Sensor Hi
              ;  bit 6   code 13, o2 sensor
              ;  bit 7   code 12, No ref's, (eng not running ?)
              ;-----------------------------
              ;
LD50E:  FCB $39 ; Mask for MALFFLG2,  0011 1001
              ;
              ; 1  b0  code 42, EST Mon error
              ; 0  b1  code 41, NO DRP , (NOT USED)
              ; 0  b2  code 35, IAC ERROR, (NOT USED)
              ; 1  b3  code 34, MAP Sensor low
              ;
              ; 1  b4  code 33, MAP Sensor hi
              ; 1  b5  code 32, EGR failure
              ; 0  b6  code 31, MAP LOW, (NOT USED)
              ; 0  b7  code 25, MAT Sensor high temp, (NOT USED)
              ;-----------------------------
              ;
LD05F:  FCB $F9 ; Mask for MALFFLG3, 1111 1001
              ;
              ; 1  bit 0  code 55, ADU Error
              ; 0  bit 1  code 54, Fuel pump relay malfunction
              ; 0  bit 2  code 53, VATS, (NOT USED)
              ; 1  bit 3  code 52, Cal-pack missing
              ;
              ; 1  bit 4  code 51, EPROM error
              ; 1  bit 5  code 45, o2 Rich
              ; 1  bit 6  code 44, o2 Lean
```

```
                ; 1  bit 7  code 43, ESC failure
                ;-----------------------------------------
                ;
                ;
LD510:  FCB 50  ; Num of successive pwr ups w/no errors
                ; AFTER 50 Ok START'S ARR'S WILL BE RESET
                ;
                ;-----------------------------------------


        ;---------------------------------------
        ; ERROR LOG TIME CONSTANTS
        ;---------------------------------------
LD511   FCB 10      ; ERROR LOG TIME CONSTANT 1,  1 Ssec
LD512   FCB 20      ; ERROR LOG TIME CONSTANT 2,  2 Ssec
LD513   FCB 100     ; ERROR LOG TIME CONSTANT 3,  10 Ssec
LD514   FCB 120     ; ERROR LOG TIME CONSTANT 4,  12 Ssec
        ;---------------------------------------


        ;-----------------------------------------------
        ; Error 13 param's
        ; o2 Sensor
        ;-----------------------------------------------
LD515   FCB 60      ; Time since run eable, (120 Sec)

LD516   FCB 81      ; 352 mvdc, o2 Sensor Lo limit  o2 Test window
LD517   FCB 127     ; 552 mvdc, o2 Sensor Hi limit
                    ;
LD518   FCB 13      ; TPS Min limit, (5%)
LD519   FCB 30      ; Time limit, (60 Sec)
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; Error 13/14 param's
        ; o2/MAP
        ;-----------------------------------------------
LD51A   FCB 81      ; 65c, Coolant Min thresh, 1k PU
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; Error 14 param's
        ; HI COOLANT TEMP
        ;-----------------------------------------------
LD51B:  FCB 1       ; TIME SINCE RUN ENABLE, (1 Sec)
LD51C   FCB 16      ; 135c, COOLANT HI LIMIT, 1k PU
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; Error 15 param's
        ; HI COOLANT TEMP
        ;-----------------------------------------------
LD51D   FCB 0       ; 0 Sec's TIME SINCE RUN ENABLE
LD51E   FCB 253     ; 35c, COOLANT LOW LIMIT
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; Error 14/15 param
        ; Coolant default
        ;-----------------------------------------------
LD51F   FCB 126      ; 50c, Coolant default
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; error 21 param's
        ; TPS High
```

```
        ;---------------------------------------------
LD520:  FCB 128     ; 2.5vdc,   TPS limit,
LD521:  FCB 80      ; 8 Sec,    Time limtit,
LD522:  FCB 112     ; 51.7 Kpa  Baro limit,
        ;---------------------------------------------

        ;---------------------------------------------
        ; error 22 param's
        ; Low TPS
        ;---------------------------------------------
LD523:  FCB 10      ; TPS limit, 0.20 VCD
LD524:  FCB 48      ; DEFAULT TPS, 0.96 VDC
        ;---------------------------------------------

        ;---------------------------------------------
        ; ERR 24
        ; VSS
        ;---------------------------------------------
LD525:  FCB 4           ; 4 MPH Vss LIMIT

            ;
            ; Valid test RPM window
            ;
LD526:  FCB 56          ; 1400 RPM LO LIMIT
LD527:  FCB 240         ; 6000 RPM HI LIMIT
                        ;
LD528:  FCB 40          ; 25.1 Kpa MAP LIMIT
LD529:  FCB 92          ; 65c,COOL LMT, 1k PU
                        ;
LD52A:  FCB 5           ; 5 sec TIME LMT
        ;---------------------------------------------

        ;---------------------------------------------
        ; ERR 32
        ; >> EGR <<
        ;---------------------------------------------
LD52B:  FCB 30          ;  30 Sec's DIAG CYCLE TIME

            ;
            ; ENABLED IF IN MAP WINDOW
            ;
LD52C:  FCB 80          ; 39.9 Kpa. LO LD DISABLE
LD52D:  FCB 208         ; 87.1 Kpa. HI LD DISABLE

            ;
            ; ENABLED IF IN TPS WINDOW
            ;
LD52E:  FCB 17          ; 6.6% LO TPS LIMIT
LD52F:  FCB 64          ; 25%  HI TPS LIMIT

LD530   FCB 250         ; 98% EGR ON THRESH
LD531   FCB 25          ; 2.5 SEC'S EGR ERR DELAY TMR
LD532   FCB 3           ; 3 CNTS FAIL CNT'T THRESH
LD533   FCB 10          ; 3.9% TPS, CHNG TO DISABLE TEST
LD534   FCB 28          ; 2.8 Sec's TEST DURRATION
LD535   FCB 4           ; INTIGRATOR CNT LESS FOR EGR FAULT
LD536   FCB 45          ; 45 MPH REQ TO ENABLE TEST
LD537   FCB 255         ; 99.6% EGR D.C, DECREMENT FOR TEST IN WORK
                        ; (Big Blk IS TYP 50%)
        ;---------------------------------------------

        ;---------------------------------------------
        ; error 33 param's
        ; Hi MAP
        ;---------------------------------------------
LD538:  FCB 10          ; 200 mvdc TPS limit
```

```
LD539:  FCB 156         ;  67.9 Kpa, MAP limit
LD53A:  FCB 50          ;   5 Sec's Time limit
        ;---------------------------------------------

        ;---------------------------------------------
        ; error 34 param's
        ; Lo MAP
        ;---------------------------------------------
LD53B   FCB 10      ; MAP limit, (14.0 Kpa)
LD53C   FCB 64      ; 1200 RPM, (TBL)
LD53D   FCB 2       ; 0.02 SEC TIME LIMIT (SEC * 80)
LD53E   FCB 54      ; 1.08 VDC TPS LMT
LD53F   FCB 218     ; 90.8 Kpa DEFAULT MAP IF ERR BEFORE (NOT RUNNING)
        ;---------------------------------------------

        ;---------------------------------------------
        ; ERROR 33/34 PARAM
        ; MAP DEFAULT COEFF
        ;---------------------------------------------
LD540:  FCB 150     ; 2.34, MAP default coef, COEF * 64

        ;---------------------------------------------
        ; MAP BIAS DEFAULT
        ; vs RPM
        ;---------------------------------------------
LD541   FCB 64      ; UPPER TBL LIMIT
                    ;
                    ; RPM/SPD A/D VAL,   RPM
                    ;-----------------------------------
LD542   FCB 112     ; 112                800
LD543   FCB 85      ; 85                1600
LD544   FCB 51      ; 51                2400
LD545   FCB 35      ; 35                3200
        ;---------------------------------------------

        ;---------------------------------------------
        ; ERROR 42
        ; EST MONITOR
        ;---------------------------------------------
LD546:  FCB 4   ; RPM limit, (450 RPM)
LD547   FCB 0   ; Num PA1 cnt's for error
LD548   FCB 4   ; Num of EST faults for 42A
LD549   FCB 4   ; Num of EST faults for 42B
        ;---------------------------------------------


        ;---------------------------------------------
        ; ERROR 43
        ;
        ; ESC FAIL
        ;---------------------------------------------
LD54A:  FCB 0       ; 0 SEC Eng run time prior to test
LD54B   FCB 120     ; 240 SEC'S, Min time since run enable
LD54C   FCB 235     ; PA count limit
LD54D   FCB 23      ; 2.3 SEC'S, EST fail test period
LD54E   FCB 3       ; TEST DURATION
                    ;
LD54F   FCB 55      ;  84c, ERR 43 TEMP LIMIT
LD550   FCB 34      ; 105c, ERR 43 HOT TEMP LIMIT
                    ;
LD551   FCB 128     ; 3200 RPM LIMIT
LD552   FCB 195     ; 82 Kpa MAP LIMIT (TBL)
        ;---------------------------------------------

        ;---------------------------------------------
        ; SA TO FORCE KNK FOR TEST
```

```
        ;----------------------------------------
LD553   FCB 34      ; 11.9 Deg SA TEST SPK 1st Pwr Enr MODE
LD554   FCB 63      ; 22.2 Deg SA TEST SPK 2nd Pwr Enr MODE

LD555   FCB 2       ; 2, KNOCK ACCUM LIMIT
        ;----------------------------------------

        ;----------------------------------------
        ; ERR 44
        ; LEAN o2
        ;----------------------------------------
LD556:  FCB 34      ; 148 mvdc o2 LOW LIMIT
LD557:  FCB 20      ; 20 Sec TIME REQ
        ;----------------------------------------

        ;----------------------------------------
        ; ERROR 45
        ; RICH o2
        ;----------------------------------------
LD558   FCB 173     ; 751 mvdc, o2 SENSOR HI LIMIT,
LD559   FCB 60      ; 60 Sec's, TIME LIMIT
LD55A   FCB 13      ; 5%, TPS HI LIMIT
LD55B   FCB 0       ; 0%, TPS LO LIMIT
        ;----------------------------------------

        ;----------------------------------------
        ; ERROR 54
        ; PUMP RELAY ERROR
        ;----------------------------------------
LD55C   FCB 30      ; Fuel pump delay time .. fm ign on to test bgn
        ;----------------------------------------

        *==========================================
        * END OF DIAGNOSTICS
        *
        *==========================================


        *==========================================
        *  AIR MANAGMENT PARMS
        *
        *==========================================
LD55D   FCB 0       ; 0 Kpa DIFF MAP THRESH
LD55E   FCB 0       ; DIVERT TIME
LD55F   FCB 2       ; MJR LP o2 COEF
LD560   FCB 192     ; LOW TEMP (144c, (291f)
LD561   FCB 0       ; 0 Kpa MAX MAP FOR DIVERT
LD562   FCB 255     ; 200c COLD DIVERT THRESH
LD563   FCB 5       ; 5 Sec Air to Ports if in PWR enrich
        *==========================================



        *==========================================
        * TCC ASDZ, 5.7L V8
        *
        *==========================================
LD564:  FCB 112     ; 65c, TCC LOWER TEMP THRESH
                    ;

        ;----------------------------------------
        ; INDEXED LOOK UP OF TCC PARAM'S
        ;----------------------------------------
LD565:  FCB 3       ; TCC LD PARAM  SELECT
                    ; 0000 0000 = VAC
                    ; 0000 0001 = MAP
```

```
                    ; 0000 0011 = TPS
                    ;
LD566:  FCB 0       ; 0 MPH TCC COAST RELEASE
                    ;-------------------------------------
LD567:  FCB 7       ; 0.14 VDC TPS, TCC COAST LO MPH LD LIMIT
LD568:  FCB 7       ; 0.14 VDC TPS, TCC COAST HI MPH LD LIMIT
LD569:  FCB 1       ; 1d, TPS HYST FOR COAST LD'S ,(2 ABOVE)
                    ;-------------------------------------
LD56A:  FCB 0       ; 0 Sec COAST RELEASE TMR, (SEC * 10)
                    ;
LD56B:  FCB 255     ; MPH LAG FILT COEF
                    ;
LD56C   FCB 1       ; 100 msec, TCC DLY AFTER 4 -> 3 DN SHFT,  1 = NOP
                    ;
LD56D   FCB 5       ; 500 msec TCC DLY BEFORE LOCK ENAB AFTER OTHER CONDITIONS OK.
                    ;
LD56E   FCB 100     ; TCC WIL NOT UNLOCK IF Vss G.T.100 MPH
                    ;
                    ;---------------------------------

        *===============================================
        * LO GEARS TCC
        *
        *===============================================
                    ; UNLOCK TO LOCK, LOW GEARS
                    ;---------------------------------
LD56F:  FCB 26      ;   26 MPH, (43 MPH)
LD570:  FCB 52      ; 1300 RPM
                    ;---------------------------------
                    ;
                    ;---------------------------------
                    ; LOCK TO UNLOCK, LOW GEARS
                    ;---------------------------------
LD571:  FCB 24      ;  24 MPH, (40 MPH)
LD572:  FCB 36      ; 900 RPM
                    ;---------------------------------

        *===============================================
        * TCC LD LIMIT vs MPH or RPM
        * LOW GEARS
        *
        * Also used for shift light
        *
        * TABLE = %LD * 2.56
        *===============================================
        ;-----------------------------------------------
        ; UPPER LIMIT
        ;-----------------------------------------------
                    ;
                    ; %         MPH     RPM
                    ;---------------------------------
LD573   FCB 38      ; 13.6      10      1000
LD574   FCB 38      ; 13.6      15      1100
LD575   FCB 38      ; 13.6      20      1200
LD576   FCB 51      ; 19.9      25      1300
LD577   FCB 67      ; 26.1      30      1400
LD578   FCB 82      ; 32.0      35      1500
LD579   FCB 95      ; 37.1      40      1600
LD57A   FCB 115     ; 44.9      45      1700
LD57B   FCB 128     ; 50.0      50      1800
LD57C   FCB 128     ; 50.0      55      1900
LD57D   FCB 128     ; 50.0      60      2000
        ;-----------------------------------------------


        ;-----------------------------------------------
```

```
        ; LOW GEARS, LOW LIMIT
        ;-----------------------------------------
                    ;
                    ; %         MPH     RPM
                    ;---------------------------------
LD57E   FCB  0      ;  0        10      1000
LD57F   FCB  0      ;  0        15      1100
LD580   FCB 13      ;  5.1      20      1200
LD581   FCB 26      ; 14.0      25      1300
LD582   FCB 36      ; 14.1      30      1400
LD583   FCB 49      ; 19.1      35      1500
LD584   FCB 59      ; 23.0      40      1600
LD585   FCB 72      ; 28.1      45      1700
LD586   FCB 82      ; 32.0      50      1800
LD587   FCB 82      ; 32.0      55      1900
LD588   FCB 82      ; 32.0      60      2000
        *=========================================

        *=========================================
        * HI GEARS TCC
        *
        *=========================================
                    ; UNLOCK TO LOCK
                    ;---------------------------------
LD589:  FCB 26      ; 26 MPH, (43 MPH)
LD58A:  FCB 52      ; 1300 RPM
                    ;---------------------------------
                    ;
                    ;---------------------------------
                    ; LOCK TO UNLOCK
                    ;---------------------------------
LD58B:  FCB 24      ; 24 MPH, (40 MPH)
LD58C:  FCB 36      ; 900 RPM
        *=========================================

        ;-----------------------------------------
        ; TCC LD LIMIT vs MPH or RPM
        ; HI GEARS
        ;
        ; Also used for shift light
        ;
        ; TABLE = %LD * 2.56
        ;-----------------------------------------
        ;-----------------------------------------
        ; UPPER LIMIT
        ;-----------------------------------------
                    ; %         MPH     RPM
                    ;---------------------------------
LD58D   FCB 38      ; 13.6      10      1000
LD58E   FCB 38      ; 13.6      15      1100
LD58F   FCB 38      ; 13.6      20      1200
LD590   FCB 51      ; 19.9      25      1300
LD591   FCB 76      ; 29.6      30      1400
LD592   FCB 82      ; 32.0      35      1500
LD593   FCB 95      ; 37.1      40      1600
LD594   FCB 115     ; 44.9      45      1700
LD595   FCB 128     ; 50.0      50      1800
LD596   FCB 128     ; 50.0      55      1900
LD597   FCB 128     ; 50.0      60      2000
        ;-----------------------------------------


        ;-----------------------------------------
        ; LOWER LIMIT
        ;-----------------------------------------
                    ;
```

```
                ; %         MPH     RPM
                ;-----------------------------------
LD598   FCB 26  ; 14.0      10      1000
LD599   FCB 26  ; 14.0      15      1100
LD59A   FCB 26  ; 14.0      20      1200
LD59B   FCB 26  ; 14.0      25      1300
LD59C   FCB 36  ; 14.1      30      1400
LD59D   FCB 49  ; 19.1      35      1500
LD59E   FCB 59  ; 23.0      40      1600
LD59F   FCB 72  ; 28.1      45      1700
LD5A0   FCB 82  ; 32.0      50      1800
LD5A1   FCB 82  ; 32.0      55      1900
LD5A2   FCB 82  ; 32.0      60      2000
        ;-----------------------------------------------

        *===============================================
        * SHIFT LIGHT PARAMS
        *
        *===============================================

        ;-----------------------------------------------
        ; UPPER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 1ST GEAR
        ;-----------------------------------------------
LD5A3:  FCB 255     ; RPM/MPH HI RATIO FOR 1ST GR


LD5A4:  FCB

        ;-----------------------------------------------
        ; UPPER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 2nd GEAR
        ;-----------------------------------------------
LD5A5:  FCB 80      ;

        ;-----------------------------------------------
        ; UPPER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 3rd GEAR
        ;-----------------------------------------------
LD5A6:  FCB 45      ;

        ;-----------------------------------------------
        ; UPPER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 4th GEAR
        ;-----------------------------------------------
LD5A7:  FCB 35      ;

        ;-----------------------------------------------
        ; LOWER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 1st GEAR
        ;-----------------------------------------------
LD5A8:  FCB 110     ; RPM/MPH LOW RATIO

        ;-----------------------------------------------
        ; LOWER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 2ND GEAR
        ;-----------------------------------------------
LD5A9:  FCB 55      ; RPM/MPH LOW RATIO

        ;-----------------------------------------------
        ; LOWER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 3RD GEAR
        ;-----------------------------------------------
LD5AA:  FCB 34      ; RPM/MPH LOW RATIO

        ;-----------------------------------------------
```

```
        ; LOWER RPM/MPH VAL OF A PAIR USED  TO CALC
        ; BEST RANGE FOR 4TH GEAR
        ;---------------------------------------------
LD5AB:  FCB 23      ; RPM/MPH LOW RATIO

        ;---------------------------------------------
        ; ENABLE LITE ON  PARAMS
        ;
        ;---------------------------------------------
LD5AC:  FCB 64      ; 1600 RPM, IF 1ST GR IF G.T. THRESH
LD5AD:  FCB 64      ; 1600 RPM, IF 2ND GR IF G.T. THRESH
LD5AE:  FCB 254     ; 6350 RPM, IF 3RD GR IF G.T. THRESH
LD5AF:  FCB 254     ; 6350 RPM, IF 4TH GR IF G.T.   THRESH
        ;---------------------------------------------


        ;---------------------------------------------
        ; 0 - 2  MULT FOR ADJ TPS
        ;        RELETIVE TO CURRENT GEAR, (N/A FOR AUTO)
        ;---------------------------------------------
LD5B0:  FCB 128     ; 1.0 ADJ TO TPS IN 1st GR
LD5B1:  FCB 128     ; 1.0 ADJ TO TPS IN 2nd GR
LD5B2:  FCB 128     ; 1.0 ADJ TO TPS IN 3rd GR
LD5B3:  FCB 128     ; 1.0 ADJ TO TPS IN 4th GR
        ;---------------------------------------------

LD5B4:  FCB 32      ; 15c, 59f MIN COOL FOR FOR LIGHT OFF FOR LOWER GEARS
                    ;
LD5B5:  FCB 13      ; 260 mvdc TPS, Light is OFF below thresh for LOWER gear
LD5B6:  FCB 10      ; 200 mvdc TPS, Light is OFF below thresh for HIGH gear
LD5B7:  FCB 170     ; 4250 RPM, Light always enabled above thresh
                    ;
LD5B8:  FCB 5       ; 0.5 sec'S 1ST GEAR, DELAY BEFORE TURNING ON SHIFT LIGHT
                    ;
LD5B9:  FCB 25      ; 2.5 sec's 4 TH GEAR, DELAY BEFORE TURNING ON SHIFT LIGHT

        ;---------------------------------------------
        ; TCC TPS MULT vs BARO
        ;
        ; USED FOR TCC & MAN XMISSION
        ;
        ; TBL = FACTOR * 128
        ;---------------------------------------------
        L05BA       ; MULT       Kpa BARO
                    ;-----------------------------------
LD5BA:  FCB 128     ; 1.0       75
LD5BB:  FCB 128     ; 1.0       85
LD5BC:  FCB 128     ; 1.0       95
LD5BD:  FCB 128     ; 1.0       105
        ;---------------------------------------------
        *=============================================
        * END OF XMISSION PARAMS
        *=============================================

        ;---------------------------------------------
        ; COLD START THROTTLE KICKER
        ; >> NOT USED <<
        ;---------------------------------------------
LD5BE:  FCB 0       ; 200c FOR KICKER ON
LD5BF:  FCB 0       ; 200c FOR KICKER OFF
LD5C0:  FCB 0       ;  0 VDC TPS FOR KICKER OFF
        ;---------------------------------------------

        *=============================================
        * IAC PARAMS
        * TYPE 42 ECM, ASDZ, 5.7l V8
```

```
        *
        *=============================================
LD5C1:  FCB 25      ; 25 STEPS, INT NON VOL RAM FAIL FOR A/C ON STEPS
LD5C2:  FCB 145     ; 146 STEPS, MOTOR PK POSIT       <----<<<<<
LD5C3:  FCB 20      ;  .. Sec's STEPPER MOTOR PK TO RUN DELAY
                    ;
LD5C4:  FCB 34      ; 425 RPM PWR STEER STALL
LD5C5:  FCB 40      ; 500 RPM/12.5 TO EXIT PWR STEER STALL
LD5C6:  FCB 3       ; 1% TPS FOR CLOSED THROTLE


        ;---------------------------------------------
        ; INDEXED TBL
        ;
        ;---------------------------------------------
LD5C7:  FCB 2       ; Clsd Lp SMALL ERROR RETRACT
LD5C8:  FCB 1       ; Clsd Lp LARGE ERROR RETRACT
                    ;
LD5C9:  FCB 1       ; Clsd Lp SMALL ERR EXTEND
LD5CA:  FCB 0       ; Clsd Lp LARGE ERR EXTEND
        ;---------------------------------------------


LD5CB:  FCB 5       ; NEG ERR BK PT FOR LARGE GAIN WD
LD5CC:  FCB 4       ; POS ERR BK PT FOR LARGE GAIN WD
                    ;
LD5CD:  FCB 2       ; 25 RPM, DEAD BAND
LD5CE:  FCB 200     ; RETRACT PULSE RESET
                    ;
LD5CF:  FCB 35      ; 35, INIT MOTOR POSIT no A/C
LD5D0:  FCB 5       ;  5, MIN DIFF IAC STEP'S w A/C
LD5D1:  FCB 35      ; 35, MAX DIFF IAC STEP'S w A/C
                    ;
LD5D2:  FCB 87      ; 8.7 VDC, STEPPER MOTER PROTECT
LD5D3:  FCB 40      ; 40, DECEL STALL Fuel Cut Off  STEP'S
LD5D4:  FCB 0       ;  0, DECEL  Fuel Cut Off  STEP'S
                    ;
LD5D5:  FCB 60      ; 1500 RPM, ALDL RESET TRHRESH
LD5D6:  FCB 0       ; DESIRED MP A/C ADJ BIAS
                    ;
LD5D7:  FCB 5       ; 5 sec FOR ENABLE IAC KICK DN
LD5D8:  FCB 25      ; 25, KICK DN ADJ STEPS
                    ;
LD5D9:  FCB 1       ; 1 STEP,PK/NEUT POSIT DIFF   <-----<<<
LD5DA:  FCB 0       ; 0,  DIFF ENG SPD FOR A/C ON (RPM/12.5)
                    ;
LD5DB:  FCB 80      ; ALDL (1000 RPM)
LD5DC:  FCB 5       ; 5 STEPS INCR FOR BATT VDC DECREASE
LD5DD:  FCB 2       ; 0.2 VDC BATT DECR FOR INCR STEPS
                    ;
LD5DE:  FCB 145     ; MAX IAC    <-----<<<<
                    ;
LD5DF:  FCB 255     ; MOTOR R/S WITH A/C 255 STEPS
LD5E0:  FCB 254     ; MOTOR R/S WITH OUT A/C 255 STEP
                    ;
LD5E1:  FCB 96      ; 1200 RPM FOR COLD RPM IN KICK DN MODE   <-----<<<
LD5E2:  FCB 88      ; 1100 RPM MAX HOT RPM FOR PK/NEUT   <-----<<<
LD5E3:  FCB 2       ;   25 RPM DIFF ADD FOR A/C ON
                    ;
LD5E4:  FCB 51      ; LOW Vss FILTER COEF
LD5E5:  FCB 51      ; MED Vss FILTER COEF
LD5E6:  FCB 16      ;  HI Vss FILTER COEF
                    ;
LD5E7:  FCB 2       ; 0.4 Sec, DECAY DELAY FOR LOW VSS Sec/5
LD5E8:  FCB 5       ; 1.0 Sec, DECAY DELAY FOR HI  VSS Sec/5
                    ;
```

```
LD5E9:  FCB 22      ; DECAY DECAY COEF, LO Vss
LD5EA:  FCB 30      ; DECAY FILT COEF
LD5EB:  FCB 38      ; FAST DECAY FILTER COEF
                    ;
LD5EC:  FCB 12      ;  3.75 MPH FOR MIN COEF THRESH
LD5ED:  FCB 64      ; 20.0  MPH FOR MAX COEF THRESH
                    ;
LD5EE:  FCB 10      ; 10 STEPS,  MIN VAL AT HI Vss
LD5EF:  FCB 6       ; %TPS FOR THROT FOLLOWER BIAS
                    ;
LD5F0:  FCB 32      ; %THROT FOLLOWER IN PK/NEUT
LD5F1:  FCB 110     ; %THROT FOLLOWER NOT IN PK/NEUT
                    ;
LD5F2:  FCB 60      ; MAX THROT FOLLOWER BIAS, 60 STEPS
LD5F3:  FCB 1       ; ... Deg c, TEMP FOR COLD RPM LIMITING, TBL 2
                    ;
LD5F4:  FCB 16      ; 5 MPH, Vss FOR N BIAS = 0
                    ;

        *===========================================
        * IAC MOTOR POSIT vs COOLANT
        * (IN STEPS) ASDZ, 5.7L V8 TYPE $42 ECM
        *
        *
        * TBL = STEPS
        *===========================================
        ORG $05F5   ;
                    ;   STEPS     Deg c     Deg f
                    ;---------------------------------
LD5F5   FCB 24      ; 24         HOT        HOT
LD5F6   FCB 24      ; 24        136.0       277
LD5F7   FCB 24      ; 24        107.0       225
LD5F8   FCB 24      ; 24         91.0       196
LD5F9   FCB 24      ; 24         80.0       176
LD5FA   FCB 24      ; 24         71.0       160
LD5FB   FCB 24      ; 24         63.0       145
LD5FC   FCB 24      ; 24         56.0       133
LD5FD   FCB 40      ; 40         49.3       121
LD5FE   FCB 50      ; 50         43.3       110
LD5FF   FCB 65      ; 65         37.0        99
LD600   FCB 80      ; 80         30.5        87
LD601   FCB 90      ; 90         23.5        74
LD602   FCB 100     ; 100        15.5        60
LD603   FCB 110     ; 110         6.0        43
LD604   FCB 120     ; 120        -8.5        17
LD605   FCB 145     ; 145        COLD       COLD
        *===========================================

        ;-------------------------------------------
        ; POSIT AFER MOTOR RESET vs BARO
        ;
        ; TBL = STEPS
        ;-------------------------------------------
        ORG $0606   ; STEPS     Kpa BARO
                    ;---------------------------------
LD606   FCB 60      ; 60        75
LD607   FCB 50      ; 50        85
LD608   FCB 40      ; 40        95
LD609   FCB 40      ; 40        105
        ;-------------------------------------------

        ;-------------------------------------------
        ; PWR STEER STALL vs BARO
        ;
        ; TBL = STEPS
        ;-------------------------------------------
```

```
        ORG $060A   ; STEPS     Kpa BARO
                    ;---------------------------------
LD60A   FCB 24      ; 24      75
LD60B   FCB 16      ; 16      85
LD60C   FCB 12      ; 12      95
LD60D   FCB 10      ; 10      105
        ;-----------------------------------------


        *=========================================
        * IAC DESIERD IDLE SPD vs COOL
        * (Closed loop)
        *
        * TBL = RPM/12.5
        *=========================================
                    ; RPM       Deg c   Deg f
                    ;---------------------------------
LD60E   FCB 48      ; 600        55     131
LD60F   FCB 48      ; 600        65     149
LD610   FCB 46      ; 575        75     167
LD611   FCB 42      ; 525        85     185
LD612   FCB 42      ; 525        95     203
LD613   FCB 42      ; 525       100     212
LD614   FCB 46      ; 575       105     221
LD615   FCB 50      ; 625       110     230
LD616   FCB 52      ; 650       115     239
        *=========================================
        *=========================================
         LAST CALIB  AT $D616
        *=========================================



        *=========================================
        * ASDZ ALGO,    12/03/93
        *       REV     06/06/95
        *
        * 127747 ECM
        *
        *     DISASSEMBLED FOR THE MC6803
        *     BY THE CAMS DISASSEMBLER
        *     12-09-1992
        *=================================================

        ORG     $D617

        *=========================================
D617:           LDAA    #03             ; SET UP A/D
D619:           LDAB    #01             ;
D61B:           JSR     LFBCE           ; A/D ROUTINE
                                        ;
D61E:           LDAA    L000F           ;
D620:           ANDA    #$08            ; MASK FOR BIT 3
D622:           TST     LD007           ; 0010 0100, 3rd AFR OPT WD
D625:           BMI     LD62C           ;
                                        ; ... else
D627:           LDAB    L0005           ;
D629:           ANDB    #$80            ; 1000 0000
D62B:           ABA                     ;
                                        ;
D62C:  LD62C    LDAB    L0010           ;
D62E:           ANDB    #$FE            ; 1111 1110
D630:           CBA                     ;
D631:           BNE     LD659           ;
                                        ; ... else
D633:           LDAB    L0049           ; TPS
```

```
D635:            SUBB    L004A              ;
D637:            BCC     LD63A              ; BR IF TPS GT ...
                                            ; ... else
D639:            NEGB                       ;
D63A:  LD63A     CMPB    LD011              ; DIFF TPS FOR MAP FILT COEF
D63D:  LD63D     BHI     LD659              ;
                                            ; ... else
D63F:  LD63F     LDAB    L001F              ; RPM/12.5
D641:            SUBB    L0020              ;
D643:            BCC     LD646              ;
                                            ; ... else
D645:            NEGB                       ;
D646:  LD646     CMPB    LD012              ; DIFF RPM TRANS MAP COEF (75 RPM)
D649:            BHI     LD659              ;
                                            ;
D64B:            LDAB    L0034              ; MPH/1
D64D:            CMPB    LD013              ; 0 MPH, THRESH FOR MAP FILT COEF
D650:            BHI     LD659              ; BR IF MPH G.T. 0 MPH
                                            ; ... else
D652:            LDAB    L002B              ; TRANSIENT MAP TMR
D654:            BEQ     LD65F              ; BR IF Z
                                            ; ... else
D656:            DECB                       ; DECR TRANSIENT MAP TMR
D657:            BRA     LD65C

          ;
          ;
          ;
D659:  LD659     LDAB    LD010              ; 500 Msec,  TRANSIENT MAP COEF
                                            ; APPLY TIME, SEC/80
D65C:  LD65C     STAB    L002B              ; TRANSIENT MAP TMR
                                            ;
D65E:            INCA                       ; INCR TMR ??
D65F:  LD65F     STAA    L0010              ; TMR
                                            ;
D661:            JSR     LFA59              ; TO FIRWARE
                                            ;
                                            ;
        *===========================================
        * LOOK UP 2D VE2 VALUE
        *   (0 - 6400 RPM)
        *
        * ADD TO VE 3d RESULTS IN $00A9
        *
        * TBL = %VE * 2.56
        *===========================================
D664:            LDAA    L001C              ; RPM/25
D666:            LDX     #$D3C7             ; LOOK UP VE2, (17 LINE)
D669:            JSR     LFB49              ; 2d LOOK PU
                                            ;
D66C:            STAA    L00A9              ; FUEL FM TBL
        *===========================================

               ;---------------
               ; GET o2 VALUE
               ;---------------
D66E:            JSR     LFBDB              ; READ A/D, (o2 & TPS)
                                            ;
D671:            STAA    L003E              ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
                                            ;
                                            ;
D673:            LDAA    #$0B               ; SET UP A/D
D675:            LDAB    #$01               ;
D677:            JSR     LFBCE              ; A/D ROUTINE
                                            ;
                                            ;
```

```
D67A:            LDAA    L001C              ; RPM/25
D67C:            CMPA    LD028              ; 2400 RPM, MIN RPM FOR SPK SA DECAY
D67F:            BHI     LD684              ; BR IF G.T. 2400 RPM
                                            ; .... else
                                            ;
D681:            JSR     LFDCB              ; TO CPU
                                            ;
                                            ;
D684:  LD684     LDAA    L003F              ; FILT o2 VAL
D686:            STAA    L00BD              ; INIT W/Filt o2 VAL
                                            ;
                                            ;
        ;---------------------
        ; FILTER o2 VAL
        ;
        ;---------------------
D688:            LDX     L003F              ; OLD Filtered o2
D68A:            LDAA    L003E              ; NEW o2 (A/D),  mvdc = 0.2304 * A/D VAL
D68C:            LDAB    LD28B              ; Minor LOOP o2 FILT COEF
D68F:            JSR     LFB12              ; LAG FILTER ROUTINE
                                            ;
D692:            STD     L003F              ; SAVE FILT o2 VAL
                                            ;
D694:            ASLB                       ;
D695:            ADCA    #0                 ; ROUND
D697:            STAA    L003E              ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
D699:            PSHA                       ;
                                            ;
D69A:            LDAB    LD28C              ; 2d, SLOW o2 COEF FOR IDLE
                                            ;
D69D:            LDAA    L0002              ; STATUS
D69F:            BMI     LD6AA              ; BR IF B7, IN IDLE CONDITIONS
                                            ; ... else
        ;-------------------------------------------------
        ; Lk Up  SLOW o2 FILTER TIME CONSTANT vs AIR FLOW
        ; (0 - 64 gms/sec)
        ;
        ; TBL =
        ;-------------------------------------------------
D6A1:            LDAA    L00BE              ; AIR FLOW, (gms/sec)
D6A3:            LDX     #$D4A3             ; INDEX SLOW o2 FILTER TIME CONSTANT TBL, (5 L
D6A6:            JSR     LFB49              ; 2d look pu
                                            ;
            ;
            ; FILTER ASYNC INJ PW
            ;
D6A9:            TAB                        ; SLOW o2 FILTER TIME CONS TO B Reg
D6AA:  LD6AA     PULA                       ; NEW o2
D6AB:            LDX     L0043              ; OLD OLD
D6AD:            JSR     LFB12              ; LAG FILTER ROUTINE
                                            ;
D6B0:            STD     L0043              ; SAVE NEW FILTERED SLOW o2 VAL
        ;-----------------------------------------


        *===========================================
        * LOOK UP FL 1
        *  MAIN FUEL PREDICITIONS vs MAP vs RPM, (FL1)
        *
        * TBL = %VE * 2.56
        *===========================================
D6B2:            LDAA    L0026              ; S/D MAP
D6B4:            LSRA                       ; DIV BY 2 FOR LK UP
D6B5:            LDAB    L001C              ; RPM/25
D6B7:            CMPB    #128               ; 3200 RPM
D6B9:            BLS     LD6BD              ; BR IF RPM LT 3200
```

```
                                        ; ... else
D6BB:           LDAB    #128            ; FORCE 3200 RPM
D6BD:  LD6BD    LDX     #$D37C          ; POINT TO FL 1 TABLE
D6C0:           JSR     LFB67           ; 3D LOOK UP
                                        ;
D6C3:           ADDA    L00A9           ; SAVE TOTAL VE RESULT
D6C5:           BCC     LD6C9           ; IF NO OVERFLOW
                                        ; ... else
D6C7:           LDAA    #255            ; USE 100 % VE
D6C9:  LD6C9    STAA    L00A9           ; SAVE VE RESULT
    ;-------------------------------------------


        *=========================================
        * GET TPS A/D VALUE & ERR CK FOR LO LIMIT
        *
        *=========================================
D6CB:           JSR     LFBDB           ; READ A/D, (o2 & TPS)
                                        ;
D6CE:           STAA    L0048           ; TPS, VDC
                                        ;
D6D0:           LDAB    L0009           ;
D6D2:           ANDB    #$DF            ; MASK FOR b5
                                        ;
D6D4:           LDAA    L0001           ;
D6D6:           BPL     LD6F0           ;
                                        ; ... else
           ;
           ; CK FOR LOW TPS ERR TEST ENABLE
           ;
D6D8:           LDAA    LD50D           ; ERR ENABLE WD 1
D6DB:           BITA    #$04            ; b2, ERR 22, TPS lo
D6DD:           BEQ     LD6F8           ; BR IF NOT b2
                                        ; ... else
D6DF:           LDAA    L0048           ; TPS, VDC
D6E1:           CMPA    LD523           ; TPS limit, 0.20 VCD, (ERR 22)
D6E4:           BCC     LD6F8           ; IF TPS > .195 BR
                                        ; ... else

           ;
           ; SET BIT 2 OF $0012
           ; (TPS LOW ERR FLG)
           ;
D6E6:           LDAA    L0012           ; CURRENT ERR FLG
D6E8:           ORAA    #$04            ; SET b2
D6EA:           STAA    L0012           ; CURRENT ERR FLG
                                        ;
D6EC:           ORAB    #$20            ; SET b5
D6EE:           BRA     LD6F8           ;
                                        ;
                                        ;
D6F0:  LD6F0    LDAA    LD289           ; Min TPS IN %, (25%)
D6F3:           STAA    L004F           ; MIN TPS VAL
D6F5:           CLR     L0050           ; TPS ERR TMR
           ;                            ;
           ; TPS OK                     ;
           ;                            ;
D6F8:  LD6F8    STAB    L0009           ;
D6FA:           JSR     LFCD8           ; TO CPU
                                        ;

           ;
           ; CHECK FOR IDLE CONDITIONS
           ;
D6FD:           LDAB    L0002           ;
```

```
D6FF:            ANDB    #$7F              ; CLR b7, IDLE CONDITIONS
                                           ;
D701:            CMPA    LD5C6             ; 1% TPS FOR CLOSED THROTTLE
D704:            BHI     LD70F             ; BR IF TPS L.T. 1%
                                           ; ... else
                                           ;
D706:            LDAA    L0034             ; MPH/1
D708:            CMPA    LD2F6             ; 4 MPH, THRES FOR IDLE
D70B:            BHI     LD70F             ; BR IF Vss LT 4 MPH
                                           ; ... else
D70D:            ORAB    #$80              ; SET b7, IDLE CONDITIONS
D70F:  LD70F     STAB    L0002             ; STATUS, IN IDLE CONDITIONS
                                           ;
D711:            LDAA    L0001             ; STATUS
D713:            BMI     LD718             ;
                                           ; ... else
D715:            JMP     LD7F0             ;
                                           ;

          ;
          ; SUB OLD MAP fm CURRENT MAP
          ;
D718:  LD718     CLRB                      ;
D719:            LDAA    L0026             ; S/D MAP
D71B:            SUBD    L002F             ; FILT MAP
D71D:            BLS     LD74D             ; BR IF DECELL
                                           ; ... else
D71F:            TSTB                      ;
D720:            BPL     LD723             ;
                                           ; ... else
D722:            INCA                      ; INCR
D723:  LD723     PSHA                      ;
D724:            STAA    L0032             ; DIFF MAP
                                           ;
D726:            LDAB    LD28F             ; 5 KPA, ACCEL ENRICH DIFF MAP
D729:            LDAA    L0049             ; TPS
D72B:            CMPA    LD290             ; FILT TPS COEF
D72E:            BHI     LD735             ;
                                           ;
D730:            ASLB                      ; x2
D731:            BCC     LD735             ; BR IF NO OVERFLOW
                                           ; ... else
D733:            LDAB    #255              ; USE MAX LMT
D735:  LD735     PULA                      ;
D736:            CBA                       ; COMP B to A Reg
D737:            BLS     LD750             ; SKIP PUMP SHOT
                                           ; ... else

        ;-------------------------------------------------
        ; LK UP  ACCEL ENRICH vs Diff MAP
        ; *** PUMP SHOT ***
        ;
        ; ASYNC ONLY TO STRETCH BPW
        ; Table = msec * 16.384
        ;-------------------------------------------------
D739:            LDX     #$D30D            ; Accel Enrich vs Diff MAP TBL
D73C:            JSR     LFB40             ; 2d lk up w/line cnt in hdr
                                           ;
D73F:            LDAB    L0049             ; TPS VAL
D741:            CMPB    LD291             ; FILT TPS COEF
D744:            BLS     LD751             ; BR IF L.T. or E.Q. TPS
                                           ; ELSE
D746:            ASLA                      ; MULT PMP SHOT * 2
D747:            BCC     LD751             ; IF NO OVER FLOW
                                           ; ... else
D749:            LDAA    #255              ; USE MAX VAL
```

```
D74B:            BRA     LD751             ; EXIT
                                           ;
D74D:  LD74D     CLR     L0032             ; DIFF MAP
D750:  LD750     CLRA                      ; CLT PUMP SHOT
                                           ;
D751:  LD751     STAA    L0053             ; SAVE PUMP SHOT LK UP
D753:            STAA    L0099             ; SAVE PUMP SHOT LK UP
                ;--------------------------


           ;
           ; CK CURRENT TPS vs OLD TPS
           ;
D755:           LDAB    L00DF             ;
                                           ;
D757:           LDAA    L0049             ; TPS
D759:           SUBA    L004B             ; ACCEL ENRICH  FILTERED TPS
D75B:           BLS     LD78C             ; BR IF NEW TPS gt OLD TPS
                                           ; (CLR PUMP SHOT VAL)
                                           ; ... else


           ;
           ; CK AFR OPT WORD 2
           ;
D75D:           TST     LD006             ; 2ND AFR OPT WORD, 1101 0000
D760:           BPL     LD76A
                   ;
                   ;   B7 = 1 = SEL Diff TPS opt for Acell Enr
                   ;   B6 = 1 = NO ENABLE MOTOR R/S DUE TO RESTART
                   ;   B4 = 1 = DO INT R/S ON BLM CELL CHANGE
                   ;
                                           ; .... else
D762:           TST     L004C
D765:           BPL     LD76A
                                           ; .... else
D767:           DECA
D768:           BEQ     LD78C             ; (CLR PUMP SHOT VAL)
                                           ; .... else
D76A:  LD76A    BITB    #$10              ; b4
D76C:           BNE     LD773             ; BR IF b4

D76E:           CMPA    LD292             ; 2% DIFF TPS REQ FOR PWR ENRICH ...
                                           ; ... WHILE IN PWR ENRICH
D771:           BLS     LD78C             ; BR IF DIFF TPS G.T. 2%,
                                           ; (CLR PUMP SHOT VAL)
                                           ; .... else
        ;
        ; CK AFR OPT WORD 2
        ;
D773:  LD773    TST     LD006             ; 2nd AFR OPT WORD
D776:           BMI     LD77B             ; BR IF
                                           ; .... else
D778:           ASLA                      ; x2
D779:           BCS     LD77E             ; BR IF OVERFLOW
                                           ; .... else
D77B:  LD77B    ASLA                      ; x2
D77C:           BCC     LD780             ; BR IF NO OVERFLOW,
                                           ; .... else
D77E:  LD77E    LDAA    #255              ; USE MAX VALUE

        ;-----------------------------------------------
        ; LK UP  Accel Enrich vs Diff TPS
        ; **** TPS PUMP SHOT ******
        ;
        ; ASYNC ONLY TO STRETCH BPW
```

```
        ; Table = msec * 16.384
        ;-----------------------------------------------
D780:  LD780     LDX     #$D313              ; ACCEL ENRICH vs DIFF TPS, (9 LINES)
                                             ; CONTRIB vs DIFF TPS
D783:            JSR     LFB36               ; 2d LK UP, WITH UPPER LIMIT
                                             ;
D786:            LDAB    L00DF               ;
D788:            ORAB    #$10                ; SET b4, (TPS AE)
D78A:            BRA     LD78F               ;
                                             ;
                                             ;
D78C:  LD78C     CLRA                        ; CLR PMP SHOT VAL
D78D:            ANDB    #$EF                ; CLR b4
D78F:  LD78F     STAB    L00DF               ;
                                             ;
D791:            STAA    L0052               ; PMP SHOT BPW
D793:            STAA    L009A               ;
                                             ;
D795:            CLRA                        ;
D796:            LDAB    L00DF               ;
D798:            BITB    #4                  ; BIT 2 (IAC OPENING)
D79A:            BEQ     LD79F               ; BR IF NOT b2
                                             ; ... else
                                             ;
D79C:            LDAA    LD293               ; 244 usec ADDED TO BPW WHILE IAC
                                             ; IS OPENING
                                             ; VAL = MSEC * 16.384
D79F:  LD79F     ADDA    L0052               ; BPW,LSB
D7A1:            BCS     LD7A7               ; BR IF NO OVERFLOW
                                             ; ... else
D7A3:            ADDA    L0053               ; BPW, MSB
D7A5:            BCC     LD7A9               ; BR IF NO OVERFLOW
                                             ; ... else
D7A7:  LD7A7     LDAA    #255                ; USE MAX VALUE
D7A9:  LD7A9     BEQ     LD7C7               ;
                                             ; ... else
                                             ;
D7AB:            LDAB    L0098               ; BPW MULT
D7AD:            MUL                         ;
D7AE:            LSRD                        ; DIV BY 8
D7AF:            LSRD                        ;
D7B0:            LSRD                        ;
D7B1:            ADDD    L0096               ; BPW,  ASYN
D7B3:            STD     L0096               ; BPW,  ASYN
                                             ;
D7B5:            LDAA    L000D               ; STATUS WD
D7B7:            BITA    #$40                ; b5
D7B9:            BNE     LD7BD               ; BR IF b5
                                             ; ... else
D7BB:            ORAA    #$01                ;
D7BD:  LD7BD     ORAA    #$C0                ;
                                             ;
D7BF:            LDAB    L0006               ; STATUS
D7C1:            ORAB    #$01                ; SET b0
D7C3:            STAB    L0006               ;
                                             ;
D7C5:            BRA     LD7CB               ;
                                             ;
                                             ;
                                             ;
D7C7:  LD7C7     LDAA    L000D               ; STATUS WD
D7C9:            ANDA    #$BF                ; CLR b6
D7CB:  LD7CB     STAA    L000D               ; STATUS WD
                                             ;
D7CD:            LDAA    L0049               ; TPS
D7CF:            CLRB                        ;
```

```
           ;                                   ;
           ; CK AFR OPT WD 2                   ;
           ;                                   ;
D7D0:           TST     LD006                 ; AFR OPT WORD 2
D7D3:           BPL     LD7EC                 ; BR IF MD WD IS POS
                                              ; ..... else
D7D5:           LDAB    L0070                 ;
D7D7:           BITB    #$02                  ; b1
D7D9:           BEQ     LD819                 ; BR IF NOT b1, (MPH for TCC)
                                              ; .... else
        ;-----------------------------------------------
        ; LK UP  ACCEL ENRICH COOL TPS FILT COEF
        ;
        ;
        ; TBL = COEF * 255
        ;-----------------------------------------------
D7DB:           LDAA    L0021                 ; COOLANT (-5 - 95c)
D7DD:           LSRA                          ; DIV/2 for lk up
D7DE:           LDX     #$D31D                ; ACCEL ENRICH COOL FILT COEF TBL, (6 LINES)
D7E1:           JSR     LFB36                   ; 2d LK UP, WITH UPPER LIMIT
                                              ;
D7E4:           TAB                           ; COEF TO B Reg
D7E5:           LDAA    L0049                 ; CURRENT TPS
D7E7:           LDX     L004B                 ; ACCEL ENRICH  FILTERED TPS
D7E9:           JSR     LFB12                 ; LAG FILTER ROUTINE
                                              ;
D7EC:  LD7EC    STD     L004B                 ; ACCEL ENRICH  FILTERED TPS
                                              ;
D7EE:           BRA     LD819                 ;
    ;-----------------------------------------------


D7F0:  LD7F0    LDAA    L0049                 ; TPS
D7F2:           CLRB                          ;
D7F3:           STD     L004B                 ; ACCEL ENRICH  FILTERED TPS
D7F5:           STD     L004D                 ; FILTERED TPS
                                              ;
D7F7:           LDAA    L0026                 ; S/D MAP
D7F9:           STD     L002F                 ; FILT MAP
                                              ;
        ;                                     ;
        ; DRP CNT'R MANAGMENT                 ;
        ;                                     ;
D7FB:           LDAA    #255                  ;
                                              ;
D7FD:           LDX     LBC00                 ; DRP COUNT,   ECU HARDWARE
D800:           CPX     LD00A                 ; ENG START UP RPM DRP PERIODS, (499 RPM)
                                              ; VAL = N * 65536 * (120/N CYL)
D803:           BLS     LD811                 ; BR IF DRP CNT GT LMT, (499 RPM)
                                              ; ... else
D805:           STX     L0053                 ; SAVE DRP CNT


D807:           LDD     LD00A                 ; ENG START UP RPM DRP PERIODS, (499 RPM)
                                              ; VAL = N * 65536 * (120/N CYL)
D80A:           JSR     LFB92                 ;
                                              ;
D80D:           TSTB                          ;
D80E:           BPL     LD811                 ;
                                              ; ... else
D810:           INCA                          ;

        ;-----------------------------------------------
        ; LK UP  COLD START CRANK CORR vs %RPM
        ;
        ;  ( 0 100% RPM)
```

```
        ; TBL = MULT * 255
        ;-----------------------------------------------
D811:  LD811     LDX     #$D400              ; COLD START CRANK CORR TBL
D814:            JSR     LFB40               ; 2D LK UP W/LINE CNT IN HDR
                                             ;
D817:            STAA    L0058               ; COLD START CRANK MULT


            ;
            ; CK OPN LP AFR
            ;
D819:  LD819     LDAA    L00A6               ;
                                             ;
D81B:            LDAB    L00A5               ; OPN LP AFR
D81D:            CMPB    #63                 ; 6.3:1
D81F:            BHI     LD842               ; BR IF  OPN LP AFR LT 6.3:1
                                             ; .... else
D821:            CMPB    #15                 ;
D823:            BHI     LD82E               ;
                                             ; .... else
D825:            CLRB                        ;
D826:            STD     L00AB               ; TEMP BPW, (SYNC)
                                             ;
                                             ;
D828:            LDAA    L00A5               ; OPN LP AFR
D82A:            ASLA                        ; x2
D82B:            ASLA                        ; x2
                                             ;
D82C:            BRA     LD835               ;
                                             ;
                                             ;
                                             ;
D82E:  LD82E     LDAB    #64                 ;
D830:            MUL                         ;
D831:            STD     L00AB               ; TEMP BPW, (SYNC)
                                             ;
D833:            LDAA    L00A5               ; OPN LP AFR
D835:  LD835     ASLA                        ;
D836:            ASLA                        ;
                                             ;
D837:            BRA     LD849               ;
;                                            ;
D839:  LD839     LDX     #L00AB              ; TEMP BPW, (SYNC)
D83C:            JSR     LFBB9               ;
                                             ;
D83F:            STD     L00AB               ; TEMP BPW, (SYNC)
                                             ;
D841:            RTS                         ;
    ;------------------------------------------------

D842:  LD842     LDAB    #16
D844:            MUL
D845:            STD     L00AB               ; TEMP BPW, (SYNC)

     ;-----------------------------------------------
     ; LK UP OPN LP AFR
     ;
     ;-----------------------------------------------
D847:            LDAA    L00A5               ; OPN LP AFR
D849:  LD849     LDX     #$FE33              ; TBL
D84C:            JSR     LFB40               ; 2d lk up W/LINE CNT IN HDR
                                             ;
D84F:            BSR     LD839               ;
                                             ;
D851:            LDAA    L00A9               ;
D853:            BSR     LD839               ;
```

```
                                        ;
D855:           LDAA    L002E           ;
D857:           BSR     LD839           ;
                                        ;
D859:           LDAA    L00AA           ; INV COOL (fm LK UP)
D85B:           BSR     LD839           ;
                                        ;
D85D:           LDAA    L0001           ;
D85F:           BMI     LD865           ;
                                        ; .... else
D861:           LDAA    L0058           ; PROPORTIONIAL DURATION, SEC'S
D863:           BSR     LD839           ;
                                        ; .... else
                                        ;
D865:  LD865:   LDAA    L00A3           ; BLM, BIN
D867:           BMI     LD86F           ; BR IF NEG
                                        ; .... else
D869:           LDAB    L000D           ; STATUS WD
D86B:           BITB    #$20            ; b5
D86D:           BNE     LD87A           ; BR IF b5
                                        ; .... else
D86F:  LD86F    JSR     LFBB9           ;
                                        ;
D872:           ASLD                    ; x2
D873:           BCC     LD878           ; BR IF NO OVERFLOW
                                        ; .... else
D875:           LDD     #$FFFF          ; USE MAX VALUE
D878:  LD878    STD     L00AB           ; TEMP BPW, (SYNC)
                                        ;
                                        ;
D87A:  LD87A    LDAA    L0021           ; COOLANT
D87C:           CMPA    LD2F2           ; DISABLE DECEL FUEL C/O BELOW 75c (128)
D87F:           BCC     LD884           ;
                                        ; .... else
D881:           JMP     LD946           ;
                                        ;
                                        ;
D884:  LD884    LDAA    L000F           ;
D886:           BITA    #$10            ; BIT 4
D888:           BNE     LD8B5           ; EXIT FUEL C/O ROUTINE
                                        ; ... else
D88A:           LDAB    L0009           ;
D88C:           BITB    #$24            ;
D88E:           BNE     LD89F           ;
                                        ; ... else
D890:           LDAA    L0049           ; TPS
D892:           CMPA    LD2F0           ; 2% MAX TPS FOR DECEL FUEL C/O
                BCS     LD89F           ; BR IF TPS LT 2%
                                        ; ... else
D897:           LDAA    L0003           ;
D899:           ORAA    #$10            ; SET b4, IN FUEL C/O
D89B:           STAA    L0003           ;
                                        ;
D89D:           BRA     LD8CB           ;
                                        ;
                                        ;
                                        ;
D89F:  LD89F    LDAA    L0020           ;
D8A1:           SUBA    L001F           ; RPM/12.5
D8A3:           BCS     LD8AA           ; BR IF UNDERFLOW
                                        ; ... else
D8A5:           CMPA    LD2E9           ; RPM/12.5, 6375 RPM  To disable C/O
                                        ; (Decel rate)
D8A8:           BHI     LD8B5           ; EXIT FUEL C/O ROUTINE
                                        ; ... else
D8AA:  LD8AA    BITB    #$48            ; b6 & b3
```

```
D8AC:            BNE     LD8E2              ; BR IF b6 & b3
                                            ; ... else
D8AE:            LDAA    L0032              ; DIFF MAP
D8B0:            CMPA    LD2EA              ; MAP INC TO DISABLE DFCO, 99.6 Kpa
D8B3:            BLS     LD8D0              ; BR IF
                                            ; ... else

        ;
        ; HERE TO COME OUT OF DECEL FUEL C/0
        ;
        ;
D8B5:  LD8B5     LDAA    L00A0              ; POST DECEL C/O TMR
D8B7:            BEQ     LD8CB              ; BR IF TMR = 0
                                            ; ... else
D8B9:            LDD     L0096              ; BPW,  ASYN
D8BB:            ADDD    LD2EB              ; FUEL PULSE WHEN EXITING DFCO,
                                            ; 7.07 Msec BY RPM < OR Pk/Neut
D8BE:            BCC     LD8C3              ; BR IF NO OVERFLOW
                                            ; ... else
D8C0:            LDD     #$7FFF             ; USE MAX VALUE
D8C3:  LD8C3     STD     L0096              ; BPW,  ASYN
                                            ;
D8C5:            LDAA    L000D              ; STATUS WD
D8C7:            ORAA    #$80               ; SET b7
D8C9:            STAA    L000D              ; STATUS WD
                                            ;
D8CB:  LD8CB     CLR     L00A0              ; POST DECEL C/O TMR
D8CE:            BRA     LD937              ;
;                                           ;
D8D0:  LD8D0     LDAA    L0026              ; S/D MAP
                                            ;
D8D2:            LDAB    L0008              ; status
                                            ;
D8D4:            CMPA    LD2E7              ; DECEL FUEL C/O MAP Thresh,
                                            ; Lower, 22.5 Kpa
D8D7:            BCS     LD8E2              ;
                                            ; ... else
D8D9:            BITB    #8                 ; b3, FUEL C/O
D8DB:            BEQ     LD937              ; BR IF NOT b3
                                            ;
D8DD:            CMPA    LD2E8              ; DECEL FUEL C/O MAP Thresh,
                                            ; Upper, 45 Kpa
D8E0:            BCC     LD937              ;
                                            ; .... else
    ;-----------------------------------------------
    ; Limits for FUEL CUT OFF In decel
    ;
    ;     1000/1400 RPM
    ;         15/18 MPH
    ;
    ; 4 LINE TBL
    ;-----------------------------------------------
D8E2:  LD8E2     LDX     #$D2E3             ; POINT TO 4 LINE TBL
                                            ;
D8E5:            LDAB    L0008              ; status
D8E7:            BITB    #$08               ; b3, FUEL C/O
D8E9:            BEQ     LD8EC              ; BR IF NOT b3
                                            ; ... else
D8EB:            INX                        ; ADJ INDEX
D8EC:  LD8EC     LDAA    L001C              ; RPM/25
D8EE:            CMPA    0,X                ; 1000/1400 RPM HYST
D8F0:            BLS     LD8B5              ; BR IF RPM LT 1000/1500, (EXIT FUEL C/O)
                                            ; ... else
D8F2:            LDAA    L0034              ; MPH/1
D8F4:            CMPA    2,X                ; 15/18 MPH
D8F6:            BCS     LD8B5              ; BR IF Vss LT 15/18 MPH, (EXIT FUEL C/O)
```

```
                                                ; ... else
        ;                                       ;
        ; CK DECEL FUEL C/O TMR                 ;
        ;                                       ;
D8F8:             LDAA    L00A1                 ; DECEL FUEL C/O TMR
D8FA:             BNE     LD934                 ; BR IF Non Z
                                                ; ... else
D8FC:             LDAB    LD2EF                 ; 3 Sec's MIN BETWEEN DECEL FUEL C/O
                                                ;
D8FF:             LDAA    L0003                 ;
D901:             BITA    #$10                  ; b4, (IN FUEL C/O)
D903:             BEQ     LD90B                 ; BR IF NOT b4
                                                ; ... else
D905:             ANDA    #$EF                  ; CLR b4
D907:             STAA    L0003                 ;
                                                ;
D909:             STAB    L009F                 ; BETWEEN DECEL FUEL C/0 TIMER
D90B:  LD90B      CMPB    L009F                 ; BETWEEN DECEL FUEL C/0 TIMER
D90D:             BLS     LD914                 ;
                                                ; ... else
D90F:             INC     L009F                 ; INCR DECEL FUEL C/0 TIMER
D912:             BRA     LD946                 ;



D914:  LD914      LDAB    L0008                 ;
D916:             ORAB    #8                    ; SET b3, FUEL C/O SET b3
D918:             STAB    L0008                 ;
                                                ;
D91A:             LDAA    LD2EE                 ; 400 Msec AFTER DECEL FUEL C/O FOR BPW
D91D:             STAA    L00A0                 ; POST DECEL C/O TMR
                                                ;
D91F:             LDAA    L000D                 ; STATUS WD
D921:             ORAA    #$10                  ; SET b4
D923:             STAA    L000D                 ; STATUS WD
                                                ;
D925:             LDAA    L009E                 ; DECEL FUEL MULT
D927:             SUBA    LD2F1                 ; 10.2% MULT FOR BPW IN DECEL FUEL C/O
                                                ; EVERY 12.5 MSEC LOOP
D92A:             BCC     LD92D                 ; BR IF NO UNDERFLOW
                                                ; ... else
D92C:             CLRA                          ;
D92D:  LD92D      STAA    L009E                 ; DECEL FUEL MULT
D92F:             JSR     LD839                 ;
                                                ;
D932:             BRA     LD9A4                 ;
                                                ;
                                                ;
D934:  LD934      DECA                          ; DECR DECEL FUEL TMR
D935:             BRA     LD93A                 ;


        ;
        ;
        ;
D937:  LD937      LDAA    LD2ED                 ; 2 Sec REQ FOR DECEL FUEL C/O
D93A:  LD93A      STAA    L00A1                 ; DECEL FUEL C/O TMR
                                                ;
D93C:             CLR     L009F                 ; BETWEEN DECEL FUEL C/0 TIMER
                                                ;
D93F:             LDAA    L00A0                 ; POST DECEL C/O TMR
D941:             BEQ     LD946                 ; BR IF TMR = Z
                                                ; ... else
D943:             DEC     L00A0                 ; DECR POST DECEL C/O TMR
                                                ;
D946:  LD946      LDAA    L0008                 ;
```

```
D948:            ANDA    #$F7            ; CLR  b3, FUEL C/O
D94A:            STAA    L0008           ;
                                         ;
D94C:            LDAA    #255            ;
D94E:            STAA    L009E           ; DECEL FUEL MULT
                                         ;
D950:            LDD     L004D           ; FILTERED TPS
D952:            ASLB                    ; x2
D953:            ADCA    #0              ; ROUND OFF
D955:            BCC     LD958           ; BR IF NO OVERFLOW
                                         ; ... else
D957:            DECA                    ;
D958:  LD958     SUBA    L0049           ; TPS
D95A:            BCS     LD99E           ; BR RPS LT
                                         ; ... else
D95C:            CMPA    LD2E0           ; 1%, TPS DECEL ENLEAN INCR THRESH
D95F:            BLS     LD99E           ; BR IF TPS LT 1%
                                         ; ... else
D961:            LDD     L002F           ; FILT MAP
D963:            ASLB                    ; x2
D964:            ADCA    #0              ;
D966:            BCC     LD969           ; BR IF NO OVERFLOW
                                         ; ... else
D968:            DECA                    ;
D969:  LD969     SUBA    L0026           ; S/D MAP
D96B:            BCS     LD99E           ; BR IF S/D MAP LT 0 or NEG
                                         ; ... else
D96D:            CMPA    LD2E1           ; 2.5 Kpa  DECEL ENLEAN INCR THRESH
D970:            BLS     LD99E           ; BR IF MAP LT 2.5 Kpa
                                         ; ... else
D972:            LDAB    LD2E2           ; 0.375  ENLEAN MAP FACTOR
                                         ; (Mult .375 * map for calc)
D975:            MUL                     ;
D976:            LDAB    L009D           ;
D978:            MUL                     ;
D979:            ASLD                    ; x2
D97A:            BCS     LD982           ; BR IF OVERFLOW
                                         ; ... else
D97C:            ASLD                    ; x2
D97D:            BCS     LD982           ; BR IF OVERFLOW
                                         ; ... else
D97F:            ASLD                    ; x2
D980:            BCC     LD984           ; BR IF NO OVERFLOW
                                         ; ... else
D982:  LD982     LDAA    #255            ; USE MAX VALUE
D984:  LD984     NEGA                    ;
D985:            BEQ     LD99E           ; BR IF Z
                                         ; ... else
D987:            LDAB    L000D           ; STATUS WD
D989:            ORAB    #$10            ; SET b4
D98B:            STAB    L000D           ; STATUS WD
                                         ;
D98D:            STAA    L0058           ; PROPORTIONIAL DURATION, Sec's
D98F:            LDX     #L0096          ; BPW,  ASYN
D992:            JSR     LFBB9           ;
                                         ;
D995:            STD     L0096           ; BPW,  ASYN
D997:            LDAA    L0058           ; PROPORTIONIAL DURATION, SEC'S
D999:            JSR     LD839           ;
                                         ;
D99C:            BRA     LD9A7           ;

        ;
        ;
        ;
        ;
```

```
D99E:  LD99E     LDAA    L000D            ; STATUS WD
D9A0:            ANDA    #$EF             ; CLR b4
D9A2:            STAA    L000D            ; STATUS WD
                                          ;
D9A4:  LD9A4     LDX     #L00AB           ; TEMP BPW, (SYNC)
D9A7:  LD9A7     LDAA    L00B2            ;
D9A9:            JSR     LFBB9            ;
                                          ;
D9AC:            ASLD                     ; x2
D9AD:            BCC     LD9B4            ; BR IF NO OVERFLOW
                                          ; ... else
D9AF:            LDD     #$FFFF           ; FORCE MAX VALUE
D9B2:            BRA     LD9CF            ;
;                                         ;
D9B4:  LD9B4     STD     L00AB            ; TEMP BPW, (SYNC)
D9B6:            CLRA                     ;
D9B7:            LDAB    L00B1            ;
D9B9:            BMI     LD9C4            ;
                                          ; ... else
D9BB:            ADDD    L00AB            ; TEMP BPW, (SYNC)
D9BD:            BCC     LD9CF            ;
                                          ; ... else
D9BF:            LDD     #$FFFF           ;
                                          ;
D9C2:            BRA     LD9CF            ;
                                          ;
                                          ;
D9C4:  LD9C4     NEGB                     ;
D9C5:            STD     L0051            ;
                                          ;
D9C7:            LDD     L00AB            ; TEMP BPW, (SYNC)
D9C9:            SUBD    L0051            ;
D9CB:            BCC     LD9CF            ; BR IF NO UNDERFLOW
                                          ; ... else
D9CD:            CLRA                     ;
D9CE:            CLRB                     ;


D9CF:  LD9CF     STD     L00AB            ; TEMP BPW, (SYNC)
                                          ;
D9D1:            LDD     L00AB            ; TEMP BPW, (SYNC)
D9D3:            ASLD                     ; x2
D9D4:            BCS     LD9DB            ; BR IF OVERFLOW
                                          ; ... else
D9D6:            ASLD                     ; x2
D9D7:            BCS     LD9DB            ; BR IF OVERFLOW
                                          ; ... else
D9D9:            BPL     LD9DE            ;
                                          ; ... else
D9DB:  LD9DB     LDD     #$7FFF           ; MAX VALUE
D9DE:  LD9DE     STD     L0053            ;
                                          ;
    ;---------------------------------------------
    ; LK UP  ASYNC MULT vs  RPM
    ;
    ;---------------------------------------------
D9E0:            LDAA    L001C            ; RPM/25
D9E2:            LDX     #$D46B           ; ASYNC MULT vs RPM TABLE
D9E5:            JSR     LFB40            ; 2D LK UP W/LINE CNT IN HDR
                                          ;
D9E8:            LDX     #L0053           ;
D9EB:            JSR     LFBB9            ;
                                          ;
D9EE:            STD     L0057            ; ASYNC INJ FUEL ADDER
                                          ;
D9F0:            LDAA    L0000            ;
```

```
D9F2:            BITA    #$10              ; b4
D9F4:            BEQ     LD9FE             ; BR IF NOT b4
                                           ; ... else
           ;
           ; DO ZERO PW SYNC INJECTION
           ;
D9F6:            CLRA                      ;
D9F7:            CLRB                      ;
D9F8:            STD     LBC0E             ; SYNC BPW PWM <--------------
                                           ;
D9FB:            JMP     LDA9D             ;
     ;---------------------------------------------

                                           ;
D9FE:  LD9FE     LDAA    L0001             ;
DA00:            BPL     LDA26             ;
                                           ; ... else
DA02:            LDX     L00AB             ; TEMP BPW, (SYNC)
DA04:            CPX     LD2D6             ; 504 usec, MIN BPW HYST VAL
DA07:            BHI     LDA26             ; BR IF BPW GT 504 usec
                                           ; ... else
DA09:            LDAA    L000E             ; A/F MODE Word Flag
DA0B:            BITA    #$10              ; b4, ASYNC FUEL
DA0D:            BNE     LDA18             ; BR IF b4, ASYNC FUEL
                                           ; ... else
DA0F:            CPX     LD2D8             ; 305 usec, MIN BPW
DA12:            BHI     LDA26             ; BR IF GT 305 usec
                                           ; ... else
DA14:            ORAA    #$10              ; SET b4, ASYNC FUEL
DA16:            STAA    L000E             ; A/F MODE Word Flag
                                           ;
DA18:  LDA18     LDD     L0057             ; ASYNC INJ MULT
DA1A:            ADDD    L00AD             ; ASYNC TEMP BPW
DA1C:            STD     L00AD             ; ASYNC TEMP BPW


                                           ; ... else
           ;
           ; DO ZERO PW SYNC INJECTION
           ;
DA1E:            LDX     #$0000            ; ZERO FUEL
DA21:            STX     LBC0E             ; SYNC BPW PWM <-------------

DA24:            BRA     LDA44




DA26:  LDA26     LDAA    L000E             ; A/F MODE Word Flag
DA28:            ANDA    #$EF              ; CLR b4, ASYNC FUEL
DA2A:            STAA    L000E             ; A/F MODE Word Flag
                                           ;
DA2C:            LDX     #$0000            ; ZERO FUEL
DA2F:            STX     L00AD             ; TEMP ASYNC BPW
                                           ;
           ;
           ; ADD IN INJ OFFSET BIAS
           ; AND DO INJECTION
           ;
DA31:            LDD     LD2DA             ; 397 usec, INJ BIAS (ADDED) ***
DA34:            ADDD    L00AB             ; TEMP BPW, (SYNC)
DA36:            BCS     LDA3A             ; BR IF OVERFLOW
                                           ; ... else
DA38:            BPL     LDA3D             ;
                                           ; ... else
```

```
DA3A:  LDA3A     LDD     #$7FFF             ;
DA3D:  LDA3D     STD     LBC0E              ; SYNC BPW PWM <--------------
                                            ;
                                            ;
DA40:            LDAA    L000D              ; STATUS WD
DA42:            BPL     LDA9D              ;
                                            ; ... else
DA44:  LDA44     LDD     L00AD              ; TEMP BPW,  (ASYNC)
DA46:            ADDD    L0096              ; BPW,  ASYNC
DA48:            PSHB
DA49:            PSHA
DA4A:            PULX

DA4B:            CPX     LD2DC              ; 11.99 Msec, MAX ASYN BPW
                                            ; ANY EXCESS SAVE & DILIVERED LATER
                                            ;
DA4E:            BHI     LDA63              ; BR IF BPW GT 12 Msec
                                            ; ... else
DA50:            CPX     LD2DE              ; 687 usec, MIN ASYNC PW
                                            ; SHORTER IS SAVED TILL LATER
                                            ;
DA53:            BLS     LDA97              ; BR IF BPW LT 687 usec
                                            ; ... else
DA55:            ADDD    LD2DA              ; 397 usec, INJ BIAS (ADDED) ***
DA58:            STD     LBC14              ; SYNC BPW PWM <--------------


           ;
           ; CLEAR ASYNC VALUE
           ;                                ;
DA5B:           CLRA                        ;
DA5C:           CLRB                        ;
DA5D:           STD     L0096              ; BPW,  (ASYNC)
DA5F:           STD     L00AD              ; TEMP BPW,  (ASYNC)

DA61:           BRA     LDA7B


         ;
         ; CK ASYNC FUEL LIMITS & APPLY START UP BIAS
         ; AND DO INJECTION
         ;
DA63:  LDA63     LDD     LD2DC              ; 11.99 Msec, MAX ASYN BPW
                                            ; ANY EXCESS SAVE & DILIVERED LATER
                                            ;
DA66:            ADDD    LD2DA              ; 397 usec, INJ BIAS (ADDED) ***
DA69:            STD     LBC14              ; SYNC BPW PWM <--------------
                                            ;
DA6C:            LDD     L00AD              ; TEMP BPW,  (ASYNC)
DA6E:            SUBD    LD2DC              ; 11.99 Msec, MAX ASYN BPW
                                            ; ANY EXCESS SAVE & DILIVERED LATER
                                            ;
DA71:            BCC     LDA79              ; IF NO UNDERFLOW
                                            ; ... else
DA73:            ADDD    L0096              ; BPW,  ASYN
DA75:            STD     L0096              ; BPW,  ASYN
                                            ;
DA77:            CLRA                       ;
DA78:            CLRB                       ;
DA79:  LDA79     STD     L00AD              ; BPW, (ASYNC)
                                            ;
DA7B:  LDA7B     JSR     LFD39              ;  SHORT TIME DELAY


DA7E:            LDD     LBC3C              ; PWM
DA81:            ANDB    #$7F               ; 0111 1111
```

```
DA83:            JSR     LFD39              ; SHORT TIME DELAY
                                            ;
DA86:            STD     LBC3C              ; PWM


DA89:            ORAB    #$80               ; SET b7
DA8B:            JSR     LFD39              ; SHORT TIME DELAY
                                            ;
DA8E:            STD     LBC3C              ; PWM
                                            ;
DA91:            LDAA    L000D              ; STATUS WD
DA93:            ORAA    #$80               ; SET b7
                                            ;
DA95:            BRA     LDA9B              ;



DA97:  LDA97     LDAA    L000D              ; STATUS WD
DA99:            ANDA    #$7F               ; CLR b7
DA9B:  LDA9B     STAA    L000D              ;


DA9D:  LDA9D     LDAA    L0070              ;
DA9F:            ANDA    #$03               ; mask, 0000 0011
DAA1:            CMPA    #$03               ;
DAA3:            BEQ     LDAA8              ; TO COLD ENG AFR vs VACUUM
                                            ; ... else
DAA5:            JMP     LDDE1              ;


        ;
        ; AFR TEST ??
        ;
DAA8:  LDAA8     LDAA    LD2AA              ; AFR (STOCH), 14.7:1
                                            ;
DAAB:            LDAB    L000E              ; A/F MODE Word Flag
DAAD:            BITB    #$A0               ; b7 & b5, CLSD LOOP, OLD HI GEAR
DAAF:            BNE     LDAD0              ; BR IF b7 & b5
                                            ; ... else
        ;-------------------------------------------------
        ; LK UP  COLD ENGINE AFR vs VACUUM
        ; (TYPE $42)
        ;-------------------------------------------------
DAB1:            LDX     #$D41D             ; COLD ENGINE AFR vs VACUUM
DAB4:            LDAA    L0031              ; VACUUM
DAB6:            JSR     LFB40              ; 2d lk up w/line cnt in hdr
                                            ;
DAB9:            ADDA    L00B5              ; ADD IN AFR
DABB:            BCC     LDABF              ; BR IF NO OVERFLOW
                                            ; ... else
DABD:            LDAA    #255               ; USE MAX LMT
DABF:  LDABF     SUBA    L00E5              ; AFR
DAC1:            BCC     LDAC4              ; BR IF NO UNDERFLOW
                                            ; ... else
        ;
        ; CHECK OPEN LP IDLE AFR
        ;

DAC3:            CLRA                       ; Zero
DAC4:  LDAC4     LDAB    L0002              ; STATUS, CHECK FOR IDEL CONDTIONS
DAC6:            BPL     LDAD0              ; BR IF NOT IN IDLE, (b7)
                                            ; ... else
DAC8:            CMPA    LD2A9              ; 14.0 LEAN OPN LP AFR LMT AT IDLE
DACB:            BLS     LDAD0              ; BR IF AFR GT 14.0
                                            ; ... else
DACD:            LDAA    LD2A9              ; 14.0 LEAN OPN LP AFR LMT AT IDLE
```

```
DAD0:  LDAD0     STAA    L00A5            ; OPN LP AFR

        ;
        ; CHECK OPEN LOOP IDLE THRESH'S
        ;
DAD2:            LDAB    L0002            ; STATUS
DAD4:            BITB    #$20             ; b5. CLOSED LOOP
DAD6:            BNE     LDAFD            ; BR IF b5, CLOSED LOOP
                                          ; ... else
DAD8:            LDAA    L0034            ; MPH/1
DADA:            CMPA    LD29E            ; 4 MPH, OPN LP IDLE THRESH
DADD:            BHI     LDAFD            ;
                                          ; ... else
DADF:            LDAA    L0049            ; TPS
DAE1:            CMPA    LD29F            ; 1.2%, OPN LP IDLE THRESH TPS
DAE4:            BHI     LDAFD            ;
                                          ; ... else
DAE6:            LDAA    L001C            ; RPM/25
DAE8:            CMPA    LD2A1            ; 50 RPM, OPEN LOOP 25 RPM THRESH IDLE IDLE ON
DAEB:            BHI     LDAFD            ; BR IF RPM GT 50 RPM
                                          ; ... else
DAED:            BITB    #$02             ; b1
DAEF:            BNE     LDAF6            ; BR IF b1
                                          ; ... else
DAF1:            CMPA    LD2A0            ; OPN LOOP,  1000 RPM THRESH IDLE OFF
DAF4:            BHI     LDAFD            ; BR IF RPM LT 1000 RPM
                                          ; ... else
                                          ;
DAF6:  LDAF6     LDAA    LD2A4            ; 13.7 OPN LP AFR MAX AT IDLE
DAF9:            CMPA    L00A5            ; OPN LP AFR
DAFB:            BLS     LDB53            ; BR IF OPN LP AFR LT MAX LMT
                                          ; ... else
DAFD:  LDAFD     ANDB    #$FD             ; CLR b1
DAFF:  LDAFF     STAB    L0002            ; STATUS
                                          ;
DB01:            CLRB                     ; CLR TMR
DB02:  LDB02     STAB    L00B4            ; IDLE AFR TIMER

        ;
        ; CK AFR OPT WD 2
        ; (OPN LP AFR OPT)
        ;
DB04:            LDAA    LD006            ; AFR OPT WORD 2
DB07:            BITA    #8               ; b3
DB09:            BEQ     LDB34            ; BR IF NOT b3
                                          ; B3 = 1 = OPN LP AFR OPT
                                          ; ... else
DB0B:            LDAA    L0003            ;
DB0D:            ORAA    #$02             ; SET b1,  (OPN LP AFR OPT)
DB0F:            STAA    L0003            ;
                                          ;
DB11:            LDAA    L00E3            ; COOL TEMP
DB13:            CMPA    LD2A7            ; -40c OPN LP DECEL THRESH
DB16:            BHI     LDB34            ;
                                          ; ... else
DB18:            LDAA    L0049            ; TPS
DB1A:            CMPA    LD29F            ; OPN LP IDLE THRESH TPS
DB1D:            BHI     LDB34            ;
                                          ; ... else
DB1F:            LDAA    L0036            ; MPH VAL
DB21:            CMPA    LD2A5            ; 6 MPH OPN LP DECEL THRESH
DB24:            BLS     LDB34            ;
                                          ; ... else
DB26:            LDAA    L001C            ; RPM/25
DB28:            CMPA    LD2A6            ; 6350 RPM OPN LP DECEL THRESH
DB2B:            BHI     LDB34            ;
```

```
                                                ; ... else
DB2D:           LDAA    LD2A8                   ;  OPN LOOP AFR MAX 15.0

DB30:           LDAB    L0008                   ; STATUS
DB32:           BMI     LDB3C                   ; b7
                                                ; ... else

            ;
            ; NOT OPEN LOOP AFR MODE SELECTED
            ;
DB34:  LDB34    LDAB    L0003
DB36:           ANDB    #$FD                    ; CLR b1,  (OPN LP AFR OPT)
DB38:           STAB    L0003                   ;
                                                ;
DB3A:           LDAA    L00A5                   ; OPN LP AFR

DB3C:  LDB3C    LDAB    L0001                   ;
DB3E:           BPL     LDB81                   ; CK FOR CLR FLOOD
                                                ; ... else
DB40:           TST     L000E                   ; A/F MODE Word Flag
DB43:           BMI     LDB47                   ;
                                                ; ... else
DB45:           BSR     LDB74


DB47:  LDB47    CMPA    LD2C5                   ; 16.2 MAX AFR
DB4A:           BLS     LDB4F                   ; BR IF AFR LT 16.2
                                                ; ... else
DB4C:           LDAA    LD2C5                   ; USE 16.2 AFR
DB4F:  LDB4F    STAA    L00A5                   ; OPN LP AFR
DB51:           BRA     LDBA8                   ;
                                                ;
                                                ;
DB53:  LDB53    BITB    #$02                    ; b1
DB55:           BNE     LDB64                   ; BR IF b1
                                                ; ... else
DB57:           LDAB    L00B4                   ; IDLE AFR TMR
DB59:           CMPB    LD2A2                   ; 8 Sec's OPN LP IDLE AFR RATIO
                                                ; ENABLE TIME DELAY
DB5C:           BCS     LDB6B                   ; BR IF TIME GT 8 SEC'S
                                                ; ... else
DB5E:           LDAB    L0002                   ; STATUS
DB60:           ORAB    #$02                    ; SET b1

DB62:           BRA     LDAFF                   ;
;                                               ;
DB64:  LDB64    LDAB    L00B4                   ; IDLE AFR TMR
DB66:           CMPB    LD2A3                   ; 5 Sec's OPN LP IDLE AFR
                                                ; RATIO TIME DELAY
DB69:           BCC     LDB3C                   ;
                                                ; ... else
DB6B:  LDB6B    LDAA    L0070                   ;
DB6D:           BITA    #$04                    ;
DB6F:           BNE     LDB72                   ;
                                                ; ... else
DB71:           INCB                            ;
DB72:  LDB72    BRA     LDB02                   ;
                                                ;
DB74:  LDB74    LDAB    L00DE                   ;
db76:           bitb    #$10                    ; b4
DB78:           BEQ     LDB80                   ;
                                                ; ... else
DB7A:           SUBA    LD302                   ; 0.2 AFR RICH BIAS FOR HOT RESTART
DB7D:           BCC     LDB80                   ;
                                                ; ... else
DB7F:           CLRA                            ;
```

```
                                        ;
DB80:  LDB80     RTS                    ;

           ;-------------------------------------------

        ;
        ; CK CLEAR FLOOD QUAL
        ;
DB81:  LDB81     LDAA    L00B6          ; AFR
                                        ;
DB83:            LDAB    LD2C6          ; 65% TPS VALUE, CLR FLOOD
DB86:            CMPB    L0049          ; CURRENT TPS
DB88:            BHI     LDB93          ;
                                        ; ... else
DB8A:            ADDA    LD2C7          ; CLR FLOOD AFR  6.0:1
DB8D:            BCC     LDB91          ; BR IF NOT OVERFLOW
                                        ; ... else
DB8F:            LDAA    #255           ; USE MAX VAL
DB91:  LDB91     BRA     LDBA4          ;
                                        ;
                                        ;
DB93:  LDB93     LDAB    L00E3          ; START UP COOL
DB95:            CMPB    LD2C8          ; TEMP THRSH FOR COLD START
                                        ; 10 C, (50f) (A/D 1K PU)
DB98:            BHI     LDB9E          ;
                                        ; ... else
DB9A:            BSR     LDB74          ;
                                        ;
DB9C:            BRA     LDBA4          ;
                                        ;
;                                       ;
DB9E:  LDB9E     CMPA    L00B5          ;
DBA0:            BCS     LDBA4          ;
                                        ; ... else
DBA2:            LDAA    L00B5          ;
DBA4:  LDBA4     STAA    L00A5          ; OPN LP AFR
                                        ;
DBA6:            BRA     LDC1A          ;
        ;-----------------------------------------------

        ;-----------------------------------------------
        ; LK UP PWR ENRICH TPS MULT vs BARO
        ;
        ; 4 LINE TBL W/MULT 50% TO 200%,
        ; TYP VAL = 200%
        ;-----------------------------------------------
DBA8:  LDBA8     JSR     LFD18          ; GET PROCESSED BARO VALUE IN A REG
                                        ;
DBAB:            LDX     #$D479         ; PWR ENRICH TPS MULT vs BARO TBL (4 LINES)
DBAE:            JSR     LFB45            ; 2d LK UP

           ;
           ; MULT TPS by LK'ED UP TBL VAL
           ;
DBB1:           LDAB    L0049           ; TPS
DBB3:           MUL                     ;
DBB4:           ADCA    #0              ; ROUND OFF
DBB6:           PSHA                    ; SAVE MULT'ED TPS VAL TO STX

        ;--------------------------------------
        ; LK UP TPS vs RPM THRESH FOR WOT TBL
        ;
        ;  9 LINE TBL, 0 - 3200/400 RPM
        ;--------------------------------------
DBB7:           LDX     #$D47D          ; TPS vs RPM THRESH FOR WOT TBL
DBBA:           JSR     LFDDA           ; SET RPM SACLE AND 2d LOOK UP
```

```
                                        ;
DBBD:           TAB                     ; SAVE TPS THESH VAL TO b REG
                                        ;
DBBE:           LDAA    L000D           ; STATUS WD
DBC0:           BITA    #$20            ; b5,
DBC2:           BEQ     LDBCA           ; BR IF NOT b5
                                        ; ... else
DBC4:           SUBB    LD2CB           ;  10% TPS, PWR ENR TPS HYST
DBC7:           BCC     LDBCA           ; BR IF
                                        ; ... else
DBC9:           CLRB                    ;
DBCA:  LDBCA    PULA                    ;
DBCB:           SBA                     ;
DBCC:           BCC     LDBD5           ; BR IF NO UNDERFLOW
                                        ; ... else
                                        ;
DBCE:           LDAA    LD2CE           ; PE ON DELAY TMR, 0 Sec's
                                        ; VAL = SEC * 20
DBD1:           STAA    L00BB           ; PE ON DELAY TMR
DBD3:           BRA     LDC29           ;
            ;-------------------------------------------

        ;
        ; CK COOLANT UPPER/LOWER LMT FOR PE BY PASS DELAY
        ; WOT LK UP, 105c/50c
        ;
DBD5:  LDBD5    LDAA    L0021           ; COOLANT 105c/50c
DBD7:           CMPA    LD2CA           ; UPPER TEMP THRSH FOR PE BYPASS DELAY
DBDA:           BHI     LDBF2           ; BR IF COOL LT 105c, (LK UP WOT)
                                        ; ... else
DBDC:           CMPA    LD2C9           ; LOWER TEMP THRSH FOR PE BYPASS DELAY
                                        ; 50 C
DBDF:           BLS     LDBF2           ; LK UP WOT
                                        ; ... else

        ;
        ; CK RPM THRESH FOR WOT DELAY
        ;
DBE1:           LDAA    LD2CC           ; DELAY PWR ENRICH BELOW 2800 RPM
DBE4:           CMPA    L001C           ; RPM/25
DBE6:           BLS     LDBEF           ; BR IF RPM GT 2800 ROM
                                        ; ... else
        ;
        ; CK THS THRESH FOR WOT DELAY
        ;
DBE8:           LDAA    L0049           ; TPS
DBEA:           CMPA    LD2CD           ; PWR ENR NOT DLY'ED IF  TPS G.T. 3.58VDC
DBED:           BCS     LDC1C           ; BR IF TPS LT 3.58VDC, (DELAY WOT)
                                        ; ... else
        ;
        ; RESET WOT DELAY TIMER
        ;
DBEF:  LDBEF    CLRB
DBF0:           STAB    L00BB           ; PE ON DELAY TMR

        *===========================================
        * WOT FUEL LOOK UP
        *
        *  0 - 3200/400 RPM)
        *
        * TBL = AFR * 10
        *===========================================
            ;
            ; SET WOT FLAG b5, $000D
            ;
DBF2:  LDBF2:   LDAA    L000D
```

```
DBF4:            ORAA    #$20              ; BIT 5, 0010 0000
DBF6:            STAA    L000D             ; SET BIT 5

DBF8:            LDX     #$D486            ; INDEX WOT AFR table
DBFB:            JSR     LFDDA             ; SET RPM SACLE AND 2d LOOK UP

DBFE:            TAB                       ; SAVE AFR TO B Reg

            ;
            ; CK COOL THRESH FOR WOT ENR
            ;
DBFF:            LDAA    L0021             ; COOLANT
DC01:            CMPA    LD2CF             ; 55c COOL TEMP THRSH FOR PWR ENRICH (96d)
DC04:            BHI     LDC13             ; BR IF COOL LT 55c
                                           ; ... else
            ;
            ; CK RPM THRESH FOR WOT PWR ENR
            ;
DC06:            LDAA    L001C             ; RPM/25
DC08:            CMPA    LD2D0             ; 2000 RPM THRESH FOR PWR ENRICH
DC0B:            BCC     LDC13             ; BR IF RPM GT 2000 RPM
                                           ; ... else
DC0D:            SUBB    LD2D1             ; 1.5:1 AFR PWR ENRICH FOR COLD
DC10:            BCC     LDC13             ; BR IF GT 1.5:1
                                           ; ... else
DC12:            CLRB
DC13:  LDC13:    LDAA    L00A5             ; OPN LP AFR
DC15:            CBA                       ;
DC16:            BLS     LDC2F
                                           ; ... else
DC18:            STAB    L00A5             ; OPN LP AFR

DC1A:  LDC1A     BRA     LDC2F             ;

    ;-----------------------------------

DC1C:  LDC1C     LDAB    L00BB             ; PE ON DELAY TMR
DC1E:            BEQ     LDBF2             ; LK UP WOT
                                           ; ... else
DC20:            LDAA    L0070             ;
DC22:            ANDA    #$06              ;
DC24:            BEQ     LDC29             ;
                                           ; ... else
DC26:            DEC     L00BB             ; PE ON DELAY TMR

DC29:  LDC29     LDAA    L000D             ; STATUS WD
DC2B:            ANDA    #$DF              ; CLR b5, (WOT FLAG)
DC2D:            STAA    L000D             ; STATUS WD

        ;-----------------------------
        ; CHECK HEADS UP STATUS
        ;
        ;-----------------------------
DC2F:  LDC2F     LDAA    L0000             ; STATUS MODE WD
DC31:            BITA    #$02              ; b1
DC33:            BEQ     LDC38             ; BR IF NOT b1
                                           ; ... else
DC35:            JSR     L5800             ; HEADS UP  <----<<<

        *===========================================
        * BLM STUFF
        *
        *===========================================
DC38:  LDC38     LDAA    L000D             ; STATUS WD
DC3A:            ANDA    #$FB              ; CLR b2
```

```
DC3C:             STAA    L000D           ; STATUS WD
                                          ;
                                          ;
DC3E:             LDAB    L00A2           ; BLM
DC40:             ANDB    #$03            ; MASK FOR LSB
DC42:             LDX     #$D2AC          ; Blk learn Mult RPM cell
                                          ; boundry, (750  RPM)
DC45:             ABX                     ;
DC46:             DEX                     ;
DC47:             TSTB                    ;
DC48:             BEQ     LDC59           ;
                                          ; ... else
DC4A:             LDAA    0,X             ;
DC4C:             SUBA    LD2B2           ; Blk learn cell RPM Hyst, (75 RPM)
DC4F:             BCS     LDC55           ;
                                          ; ... else
DC51:             CMPA    L001C           ; RPM/25
DC53:             BHI     LDC90           ;
                                          ; ... else
DC55:  LDC55      CMPB    #3              ;
DC57:             BEQ     LDC64           ;
                                          ; ... else
DC59:  LDC59      LDAA    1,X             ;
DC5B:             ADDA    LD2B2           ; Blk learn cell RPM Hyst, (75 RPM)
DC5E:             BCS     LDC64           ;
                                          ; ... else
DC60:             CMPA    L001C           ; RPM/25
DC62:             BCS     LDC90           ;
                                          ;... else
DC64:  LDC64      LDAB    L00A2           ; BLM
DC66:             ANDB    #$0C            ;
DC68:             LSRB                    ;
DC69:             LSRB                    ;
DC6A:             LDX     #$D2AF          ; Blk learn Mult MAP cell
                                          ; boundry, (26.3 Kpa)
DC6D:             ABX                     ;
DC6E:             DEX                     ;
DC6F:             TSTB                    ;
DC70:             BEQ     LDC81           ;
                                          ; ... else
DC72:             LDAA    0,X             ;
DC74:             SUBA    LD2B3           ; Blk learn cell LOAD Hyst, (2.5 Kpa)
DC77:             BCS     LDC7D           ;
                                          ;
DC79:             CMPA    L0026           ; S/D MAP
DC7B:             BHI     LDC90           ;
                                          ; ... else
DC7D:  LDC7D      CMPB    #03               ;
DC7F:             BEQ     LDC8C           ;
                                          ; ... else
DC81:  LDC81      LDAA    1,X             ;
DC83:             ADDA    LD2B3           ; Blk learn cell LOAD Hyst, (2.5 Kpa)
DC86:             BCS     LDC8C           ;
                                          ; ... else
DC88:             CMPA    L0026           ; S/D MAP
DC8A:             BCS     LDC90           ;
                                          ; ... else
DC8C:  LDC8C      LDAB    L00A2           ; BLM
DC8E:             BRA     LDCC8           ;
                                          ;

        ;
        ; SET BITS IN $000D
        ;
DC90:  LDC90      LDAA    L000D           ; STATUS WD
DC92:             ORAA    #$0C            ; b2 & b3
DC94:             STAA    L000D           ; STATUS WD
```

```
                                                ;
        ;
        ; SET BITS IN $0006
        ;
DC96:             LDAA    L0006                 ; STATUS
DC98:             ORAA    #$01                  ; SET b0
DC9A:             STAA    L0006                 ;
                                                ;
DC9C:             CLRB                          ;
                                                ;
DC9D:             LDAA    L001C                 ; RPM/25
DC9F:             CMPA    LD2AC                 ; Blk learn Mult RPM cell
                                                ; boundry, (750  RPM)
DCA2:             BCS     LDCB1                 ; IF RPM LT 750, BR
                                                ; ... else
DCA4:             INCB                          ; B = 1 ?
DCA5:             CMPA    LD2AD                 ; Blk learn Mult RPM cell
                                                ; boundry, (1800 RPM)
DCA8:             BCS     LDCB1                 ; IF RPM LT 1800, BR
                                                ; ... else
DCAA:             INCB                          ; B = 2
DCAB:             CMPA    LD2AE                 ; Blk learn Mult RPM cell
                                                ; boundry, (2600 RPM)
DCAE:             BCS     LDCB1                 ; IF RPM LT 6375 RPM, BR
                                                ; ... else
DCB0:             INCB                          ; B = 3
                                                ;
DCB1:  LDCB1:     LDAA    L0026                 ; S/D MAP
DCB3:             CMPA    LD2AF                 ; Blk learn Mult MAP cell
                                                ; boundry, (26.3 Kpa)
DCB6:             BCS     LDCC8                 ;
                                                ; ... else
DCB8:             ADDB    #4                    ;
DCBA:             CMPA    LD2B0                 ; Blk learn Mult MAP cell
                                                ; boundry, (60 Kpa)
DCBD:             BCS     LDCC8                 ;
                                                ; ... else
DCBF:             ADDB    #4                    ;
DCC1:             CMPA    LD2B1                 ; Blk learn Mult MAP cell
                                                ; boundry, (80 Kpa)
DCC4:             BCS     LDCC8                 ;
                                                ; ... else
DCC6:             ADDB    #4                    ;
DCC8:  LDCC8      LDX     #$00ED                ; RAM ADDR
DCCB:             ABX                           ;
DCCC:             LDAA    0,X                   ;
DCCE:             CMPA    LD2B9                 ; MAX BLM, 172
DCD1:             BHI     LDCD8                 ;
                                                ; ... else
DCD3:             CMPA    LD2BA                 ;  MIN BLM, 108
DCD6:             BCC     LDCE1                 ;
                                                ; ... else

        ;-----------------------------------------------
        ;
        ;
        ;-----------------------------------------------
            ;
            ; SET BITS IN $0008
            ;
DCD8:  LDCD8      LDAA    L0008                 ;
DCDA:             ORAA    #$40                  ; SET b6
DCDC:             STAA    L0008                 ;
                                                ;
DCDE:             JSR     LFDBD                 ;
                                                ;
```

```
DCE1:  LDCE1     STAA    L00A3             ; BLM, BIN
DCE3:            STAB    L00A2             ; BLM
                                           ;
DCE5:            LDAA    LD2B4             ; BPW const for EGR off,
DCE8:            LDAB    LD2B6             ; EGR on filter coef

DCEB:            TST     L0006             ; STATUS
DCEE:            BPL     LDD07             ; BR IF ...
                                           ; ... else
DCF0:            LDAA    L00BE             ; AIR FLOW, (gms/sec)
DCF2:            LDAB    #197              ;
DCF4:            MUL                       ;
DCF5:            ASLD                      ;
DCF6:            CMPA    #80               ; CLR AIR FLOW LMT
DCF8:            BLS     LDCFC             ;
                                           ; ... else
DCFA:            LDAA    #80               ; LIMIT AIR FLOW

        ;------------------------------------------
        ; Lk Up EGR COMP TABLE FOR AIR FLOW IN Gms/sec
        ;
        ; TBL IS  GMS/SEC vs PCT EGR
        ; TBL = N * 1461.5
        ;------------------------------------------
DCFC:  LDCFC     LDAB    L007F             ; AIR FLOW FOR EGR
DCFE:            LDX     #$D324            ; EGR COMP TABLE FOR AIR FLOW IN Gms/sec
DD01:            JSR     LFB67             ; 3D LOOK UP ?
                                           ;
DD04:            LDAB    LD2B5             ; EGR off filter coef

DD07:  LDD07     LDX     L00A7             ; EGR CORRECTION
DD09:            JSR     LFB12             ; LAG FILTER ROUTINE
                                           ;
DD0C:            STD     L00A7             ; EGR CORRECTION
                                           ;
DD0E:            ASLB                      ;
DD0F:            ADCA    #0                ;
DD11:            PSHA                      ;

        ;------------------------------------------
        ; Lk Up  BPW CONST MULT vs BARO
        ;
        ;  (BARO 75 - 105 Kpa)
        ; TBL = MULT * 128
        ;------------------------------------------
DD12:            LDX     #$D475            ; BPW CONST MULT vs BARO, (5 LINES)
DD15:            JSR     LFD18             ; GET PROCESSED BARO VALUE IN A REG
                                           ;
DD18:            JSR     LFB45             ; 2d LK UP

DD1B:            PULB                      ;
DD1C:            MUL                       ; APPLY MULTIPLIER
DD1D:            ASLD                      ;
DD1E:            BCC     LDD22             ; BR IF NO OVERFLOW
                                           ; ... else
DD20:            LDAA    #255              ; USE MAX LMT
DD22:  LDD22     STAA    L00A6             ;
                                           ;
DD24:            LDAA    L0070             ;
DD26:            BITA    #$04              ; b2
DD28:            BNE     LDD2D             ; BR IF NOT b2
                                           ; ... else
DD2A:            JMP     LDDDE             ;
    ;--------------------------------------------
```

```
DD2D:  LDD2D     LDAA    L009B             ; TRANS FUEL CALC INTERVEL TMR
DD2F:            BNE     LDD57             ; BR IF TIMER NZ
                                           ; ... else
DD31:            LDAA    LD294             ; 100 MSEC TRANS FUEL CALC Intervel
DD34:            STAA    L009B             ; TRANS FUEL CALC INTERVEL TMR
                                           ;

           ;---------------------
           ; FILTER TPS
           ;---------------------
DD36:           LDAB    LD295              ; TPS Filter Coef
DD39:           LDX     L004D              ; FILTERED TPS
DD3B:           LDAA    L0049              ; TPS
DD3D:           JSR     LFB12              ; LAG FILTER ROUTINE

DD40:           STD     L004D              ; FILTERED TPS
        ;-----------------------------------------------
        ; LK UP  MAP FILTER COEF vs COOL
        ;
        ;   (-5c - 95c)
        ; TBL = COEF * 255
        ;-----------------------------------------------
DD42:           LDX     #$D306             ; MAP FILTER COEF vs COOL TBL, (6 LINES)
DD45:           LDAA    L0021              ; COOLANT
DD47:           LSRA                       ; DIV BY 2 FOR LK UP
DD48:           JSR     LFB36              ; 2d LK UP, WITH UPPER LIMIT
                                           ;
DD4B:           TAB                        ; FILT MAP TO B Reg
DD4C:           LDX     L002F              ; FILT MAP VAL, (OLD)
DD4E:           LDAA    L0026              ; S/D MAP
DD50:           JSR     LFB12              ; LAG FILTER ROUTINE
                                           ;
DD53:           STD     L002F              ; FILT MAP

DD55:           BRA     LDD5A              ;
    ;-----------------------------------------------


DD57:  LDD57     DEC     L009B             ; TRANS FUEL CALC INTERVEL TMR
                                           ;
DD5A:  LDD5A     LDAA    L000E             ; A/F MODE Word Flag
DD5C:            BITA    #$02              ; b1, BLM ENABLE
DD5E:            BEQ     LDDCF             ; BR IF NOT b1, BLM ENABLE
                                           ; ... else
DD60:            LDAA    L000D             ; STATUS WD
DD62:            BITA    #$08              ; b3
DD64:            BNE     LDDCF             ; STATUS WD
                                           ; ... else
DD66:            LDAA    L00A4             ; CURRENT INTEGRATOR
DD68:            CMPA    #128              ; STOCH ?
DD6A:            BEQ     LDDCF             ; BR IF AT TARGET AFR
                                           ; ... else
DD6C:            LDAB    L00B9             ; INTEGRATOR DELAY TMR
DD6E:            INCB                      ; INC TMR
DD6F:            BMI     LDD78             ; BT IF
                                           ; ... else
DD71:            STAB    L00B9             ; INTEGRATOR DELAY TMR
DD73:            ASLB                      ; MULT * 2
DD74:            CMPB    L00B0             ; INTEGRATOR DELAY
DD76:            BCS     LDDD4             ;
                                           ; ... else
DD78:  LDD78     LDAB    L00B8             ; BLK LEARN TMR
DD7A:            INCB                      ;
DD7B:            BEQ     LDD84             ;
                                           ; ... else
DD7D:            STAB    L00B8             ; BLK LEARN TMR
```

```
DD7F:            CMPB    LD2AB           ; FREQ OF BLK LEARN UPDATE, (170 Msec)
DD82:            BCS     LDDD4           ; BR IF TMR G.T. 170 Msec
                                         ; ... else
DD84:  LDD84     SUBA    #128            ; CK CURRENT INTEGRATOR VAL
DD86:            BCS     LDD95           ; BR IF L.T. STOCH
                                         ; ... else
DD88:            CMPA    LD2B7           ; Clsd lp intagrator window val, 4
DD8B:            BLS     LDDD4           ; BR IF
                                         ; ... else
DD8D:            LDAA    L000E           ; A/F MODE Word Flag
DD8F:            BITA    #$40            ; b6, RICH
DD91:            BNE     LDDD4           ; IF b6, RICH
                                         ; ... else
DD93:            BRA     LDDA1           ;
                                         ;
                                         ;
DD95:  LDD95     NEGA                    ; INVERT INT DIFF VAL
DD96:            CMPA    LD2B7           ; Clsd lp intagrator window val, 4
DD99:            BLS     LDDD4           ;
                                         ; ... else
DD9B:            LDAA    L000E           ; A/F MODE Word Flag
DD9D:            BITA    #$40            ; b6, RICH
DD9F:            BEQ     LDDD4           ; BR IF NOT b6, RICH
                                         ; ... else
        ;---------------------
        ; UP DATE BLM CELLS
        ;
        ;---------------------
DDA1:  LDDA1     LDX     #L00ED          ; POINT TO BLM CELL START
DDA4:            LDAB    L00A2           ; BLM CELL NUMBER
DDA6:            ABX                     ; ADJ INDEX FOR BLM CELL REQUEST
DDA7:            LDAA    0,X             ; GET BLM VALUE FOR THIS CELL
                                         ;
DDA9:            LDAB    L000E           ; A/F MODE Word Flag
DDAB:            BITB    #$40            ; b6  (R/L) FLAG
DDAD:            BEQ     LDDBE           ; BR IF NOT b6, RICH
                                         ; ... else
DDAF:            SUBA    LD2B8           ; BLM modifier, 1
DDB2:            BCS     LDDB9           ;
                                         ; ... else
DDB4:            CMPA    LD2BA           ; MIN BLM, 103
DDB7:            BCC     LDDCB           ; BR IF BLM L.T. MIN
                                         ; ... else
DDB9:  LDDB9     LDAA    LD2BA           ; GET MIN BLM, 103
DDBC:            BRA     LDDCB           ;
                                         ;
                                         ;
DDBE:  LDDBE     ADDA    LD2B8           ; BLM modifier , 1
DDC1:            BCS     LDDC8           ; BR IF OVERFLOW
                                         ; ... else
DDC3:            CMPA    LD2B9           ; MAX BLM, 172
DDC6:            BLS     LDDCB           ; BR IF BLM = 172 or L.T. 172
                                         ; ... else
DDC8:  LDDC8     LDAA    LD2B9           ; USE MAX BLM, 172
DDCB:  LDDCB     STAA    0,X             ; SAVE TO BLM CELL ADDR
DDCD:            STAA    L00A3           ; BLM FOR ALDL


DDCF:  LDDCF     CLRB
DDD0:            STAB    L00B9           ; INTEGRATOR DELAY TMR
DDD2:            STAB    L00B8           ; BLK LEARN TMR
                                         ;
DDD4:  LDDD4     LDAA    L000D           ; STATUS WD
DDD6:            ANDA    #$F7            ; CLR b0
DDD8:            STAA    L000D           ; STATUS WD
                                         ;
```

```
DDDA:             LDAA    L001F             ; RPM/12.5
DDDC:             STAA    L0020             ; OLD RPM/12.5
                                            ;
DDDE:  LDDDE      JMP     LE531             ; TO CPU ADDR
    ;---------------------------------------------



DDE1:  LDDE1      LDAA    L0001             ;
DDE3:             BPL     LDE08             ;
                                            ; ... else
DDE5:             LDAA    L000E             ; A/F MODE Word Flag
DDE7:             BMI     LDDF1             ;
                                            ; ... else
            ;
            ; CK o2 FOR  TO GO CLSD LOOP,
            ;
DDE9:             LDAA    LD2BF             ; o2 Upper Limit TO GO CLSD LOOP, (734 mvdc)
                                            ; TO GO CLSD LOOP o2 MUST EXCEED
                                            ;
DDEC:             LDAB    LD2C0             ; o2 Lower Limit, (352 mvdc)
                                            ; to go CLSD LOOP o2 MUST EXCEED

DDEF:             BRA     LDDF7


            ;
            ; CK o2 FOR STAY IN CLSD LOOP WINDOW
            ;
DDF1:  LDDF1      LDAA    LD2BD             ; o2 UPPER LIMIT, (700 mvdc)
                                            ; STAY IN CLSD LOOP WINDOW
                                            ;
DDF4:             LDAB    LD2BE             ; o2 LOWER LIMIT, (352 mvdc)
                                            ; STAY IN CLSD LOOP WINDOW
                                            ;
DDF7:  LDDF7      CMPA    L003E             ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
DDF9:             BCS     LDDFF             ; IF o2 G.T. UPPER LIMIT
                                            ; ... else
DDFB:             CMPB    L003E             ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
DDFD:             BLS     LDE08             ; IF o2 L.T. LOWER LIMIT
                                            ; ... else
DDFF:  LDDFF      CLR     L009C


            ;
            ; SET BITS IN $00DE
            ;
DE02:             LDAB    L00DE
DE04:             ORAB    #1                ; SET b0
DE06:             STAB    L00DE

        ;------------------------
        ; CALC AIR FLOW VALUE
        ;------------------------
DE08:  LDE08      LDAA    L002E             ;
DE0A:             LDAB    LD2F5             ; SCALAR FOR MAP LD IN AIR FLOW (1-0) 55%
DE0D:             MUL                       ;
DE0E:             LDAB    L001C             ; RPM/25
DE10:             ASLB                      ;
DE11:             BCC     LDE15             ;
                                            ; ... else
DE13:             LDAB    #255              ;
DE15:  LDE15      MUL                       ;
DE16:             CMPA    #64               ; LIMIT AIR FLOW VALUE
DE18:             BLS     LDE1C             ;
                                            ; ... else
```

```
DE1A:            LDAA    #64              ; FORCE MAX LMT
DE1C:  LDE1C     STAA    L00BE            ; AIR FLOW, (gms/sec)

        ;-----------------------------------------------
        ; LK UP o2 SENS VOLTAGE BIAS FOR COLD OP'S
        ;
        ;-----------------------------------------------
DE1E:            LDX     #$D4D9           ; O2 SENS VOLTAGE BIAS FOR COLD OP'S TBL (13 L
DE21:            LDAA    L00E3            ; START UP COOL
DE23:            COMA                     ;
DE24:            JSR     LFB36            ; 2d LK UP, WITH UPPER LIMIT
                                          ;
DE27:            STAA    L0055            ; SAVE o2 SENSOR VOLTAGE BIAS RESULT
                                          ;
DE29:            LDAB    #3               ;
                                          ;
DE2B:  LDE2B:    STAB    L0054            ;
DE2D:            LDAA    #5               ;
DE2F:            MUL                      ;
        ;-----------------------------------------------
        ; LK UP INTAGRATOR DELAY  vs AIR FLOW
        ;
        ;-----------------------------------------------
DE30:            LDX     #$D48F           ; INTEGRATOR DELAY vs AIR FLOW TBL (5 LINES)
DE33:            ABX                      ; LINE FIND
                                          ;
DE34:            LDAA    L00BE            ; AIR FLOW, (gms/sec)
DE36:            JSR     LFB49            ; 2d look pu
                                          ;
DE39:            LDX     #L0055           ; o2 SENSOR VOLTAGE BIAS
DE3C:            LDAB    L0054            ; COLD OP'S o2, (Temp)
DE3E:            BEQ     LDE59            ;
                                          ; ... else
DE40:            TST     L0002            ; STATUS
DE43:            BPL     LDE4E            ; BR IF NOT IN IDLE CONDITIONS
                                          ; ... else
DE45:            ADDA    LD2F7            ; 109 mvdc o2 SENSOR BIAS AT IDLE
DE48:            BCC     LDE53            ; BR IF  NO OVERFLOW
                                          ; ... else
DE4A:            LDAA    #255             ; FORCE MAX VLOTAGE

DE4C:            BRA     LDE53


DE4E:  LDE4E     SUBA    L0055            ; o2 SENSOR VOLTAGE BIAS, (Temp)
DE50:            BCC     LDE53            ; BR IF NO UNDERFLOW
                                          ; ... else
DE52:            CLRA                     ; USE ZERO o2 VOLTAGE
DE53:  LDE53     ABX                      ; ADJUST INDEX
DE54:            STAA    0,X              ; STORE
DE56:            DECB                     ;
                                          ;
DE57:            BRA     LDE2B            ;


DE59:  LDE59     STAA    L00B0            ; INTEGRATOR DELAY
                                          ;
DE5B:            LDAB    L000E            ; A/F MODE Word Flag
                                          ;
DE5D:            LDAA    L0056            ;
DE5F:            ADDA    LD2F3            ; 130 MVDC, o2 WINDOW FOR FAST o2 R/L
DE62:            BCS     LDE68            ;
                                          ; ... else
DE64:            CMPA    L003F            ; FILT o2 VAL
DE66:            BCS     LDE7D            ; GO SET RICH FLAG
                                          ; ... else
```

```
DE68:  LDE68     LDAA    L0056              ;
DE6A:            SUBA    LD2F3              ; 130 MVDC, o2 WINDOW FOR FAST o2 R/L
DE6D:            BCS     LDE73              ;
                                            ; ... else
DE6F:            CMPA    L003F              ; FILT o2 VAL
DE71:            BHI     LDE79              ;
                                            ; ... else
DE73:  LDE73     LDAA    L003F              ; FILT o2 VAL
DE75:            CMPA    L00BD              ;
DE77:            BHI     LDE7D              ;
                                            ; ... else
DE79:  LDE79     ANDB    #$BF               ; CLR b6, $000E, RICH
                                            ;
DE7B:            BRA     LDE7F              ;
                                            ;
                                            ;
                                            ;
DE7D:  LDE7D     ORAB    #$40               ; SET b6, RICH
DE7F:  LDE7F     CMPB    L000E              ; A/F MODE Word Flag
DE81:            BEQ     LDE8F              ; BR IF Z
                                            ; ... else
            ;                               ;
            ; INCR o2 CROSS COUNTS                 ;
            ;                               ;
DE83:            INC     L00BA              ; o2 CROSS COUNTS
                                            ;
DE86:            LDAA    L0007              ;
DE88:            ORAA    #$10               ; SET b4
DE8A:            STAA    L0007              ;
                                            ;
DE8C:            CLRA                       ;
DE8D:            BRA     LDE94              ;
                                            ;
                                            ;
DE8F:  LDE8F     LDAA    L00BF              ; PROPORTIONIAL DURATION TMR
DE91:            INCA                       ; INCR TMR
DE92:            BEQ     LDE96              ; BR IF Z
                                            ; ... else
DE94:  LDE94     STAA    L00BF              ; PROPORTIONIAL DURATION TMR
                                            ;
DE96:  LDE96     STAB    L000E              ; A/F MODE Word Flag
DE98:            BPL     LDF08              ; RESET INT VALUE, 128
                                            ; ... else
DE9A:            LDAA    L0008              ;
DE9C:            BITA    #$08               ; b3, FUEL C/O
DE9E:            BNE     LDEA6              ; BR IF b3
                                            ; ... else
DEA0:            LDAB    L000D              ; STATUS WD
DEA2:            BITB    #$20               ; b5
DEA4:            BEQ     LDEAE              ; STATUS WD
                                            ; ... else
DEA6:  LDEA6     LDAB    L0006              ; STATUS
DEA8:            ORAB    #$01               ; SET b0
DEAA:            STAB    L0006              ;
                                            ;
DEAC:            BRA     LDF02              ;
    ;-----------------------------------------------

;
DEAE:  LDEAE     LDAB    LD006              ; 2ND AFR OPT WORD, 0001 1000
DEB1:            BITB    #$20               ; BIT 5
DEB3:            BEQ     LDEC5              ;
                                            ; ... else
DEB5:            LDAB    L000D              ; STATUS WD
DEB7:            ASRB                       ;
DEB8:            BCC     LDEC5              ;
```

```
                                        ; ... else
DEBA:           ASLB                    ;
DEBB:           STAB    L000D           ; STATUS WD

            ;
            ; SET BITS IN L0006
            ;
DEBD:  LDEBD    LDAB    L0006           ; STATUS
DEBF:           ORAB    #$01            ; SET b0
DEC1:           STAB    L0006

DEC3:           BRA     LDF08           ; RESET INT VALUE, 128
    ;-----------------------------------------------


DEC5:  LDEC5    LDAB    L000D           ; STATUS WD
DEC7:           BITB    #$10            ; b4
DEC9:           BEQ     LDED7           ; BR IF NOT b4
                                        ; ... else
DECB:           LDAA    L000E           ; A/F MODE Word Flag
DECD:           BITA    #$40            ; b6, RICH
DECF:           BNE     LDF18           ; BR IF b6
                                        ; ... else
DED1:           LDAA    L00A4           ; INTIGRATOR, BIN
DED3:           BPL     LDF18
                                        ; ... else
DED5:           BRA     LDEBD
    ;-----------------------------------------------

        ;
        ; CK AFR OPT WD 2
        ;
DED7:  LDED7    LDAB    LD006           ; 2ND AFR OPT WORD
DEDA:           BITB    #$10            ; b 4
                                        ; 1 = DO INT R/S ON BLM CELL CHANGE
DEDC:           BEQ     LDEE4           ; BR IF NOT b4
                                        ; ... else
DEDE:           LDAA    L000D           ; STATUS WD
DEE0:           BITA    #04             ; b2
DEE2:           BNE     LDEBD           ; BR IF NOT b2, (Reset = 128)
                                        ; ... else
DEE4:  LDEE4    LDAB    L0002           ; STATUS
DEE6:           BITB    #$20            ; b5, CLOSED LOOP
DEE8:           BNE     LDF18           ; BR IF b5, CLOSED LOOP
                                        ; ... else
        ;
        ; CK DECEL QUAL'S
        ;
DEEA:           LDAB    L0026           ; S/D MAP
DEEC:           CMPB    LD2C1           ; CLS LP Decel, ENLEAN MAP thresh. (26 Kpa)
DEEF:           BHI     LDF18           ; BR IF MAP GT THRESH
                                        ; ... else
DEF1:           LDAB    L001C           ; RPM/25
DEF3:           CMPB    LD2C2           ; CLS LP Decel, ENLEAN RPM
                                        ; thresh. (1000 RPM)
DEF6:           BLS     LDF18
                                        ; ... else
DEF8:           LDAA    L000E           ; A/F MODE Word Flag
DEFA:           BITA    #$40            ; b6, RICH
DEFC:           BNE     LDF18           ; BR IF b6
                                        ; ... else
DEFE:           LDAA    L00A4           ; INTIGRATOR, BIN
DF00:           BPL     LDF18
                                        ; ... else
        ;
        ; SET BIT 2
```

```
        ;
DF02:  LDF02    LDAA    L000B
DF04:           ORAA    #$04                ; SET BIT 2
DF06:           STAA    L000B

        ;-----------------------
        ;  RESET INT VALUE, 128
        ;-----------------------
DF08:  LDF08    LDAA    #128            ;
DF0A:           STAA    L00A4           ; INTIGRATOR, BIN

DF0C:           LDAA    #102
DF0E:           STAA    L0043           ;  ASYNC INJ VAL
        ;-----------------------
        ; CLR RAM LOC'S
        ;-----------------------
DF10:           CLRA
DF11:           STAA    L00AF           ; INTEGRATOR DELAY TMR
DF13:           STAA    L00BC           ; PROPORTIONIAL  FACTORED AIR FLOW

DF15:           JMP     LE008           ; TO CPU
        ;-------------------------------------

DF18:  LDF18    LDAB    L0008           ; STATUS

DF1A:           LDAA    L0043           ; ASYNC INJ VAL
DF1C:           CMPA    L0057           ; ASYNC INJ MULT, (temp)
DF1E:           BHI     LDF2C
                                        ; ... else
DF20:           SUBA    L0058           ; PROPORTIONIAL DURATION, Sec's
DF22:           BCS     LDF27
                                        ; ... else
DF24:           CLRA
DF25:           BRA     LDF46


DF27:  LDF27    NEGA
DF28:           ANDB    #$FD            ; 1111 1101
DF2A:           BRA     LDF36


DF2C:  LDF2C    SUBA    L0057           ; ASYNC INJ MULT

DF2E:           LDAB    LD2FB           ; 90.6% POS ERR MOD FACTOR FOR RICH o2 AVG
DF31:           MUL                     ;
                                        ;
DF32:           LDAB    L0008           ; STATUS
DF34:           ORAB    #$02            ; SET b1
DF36:  LDF36    STAB    L0008           ;
                                        ;
DF38:           LDAB    L0002           ; STATUS, CHECK IF IDLE
DF3A:           BPL     LDF40           ; BR IF NOT IDLE CONDITION
                                        ; ... else
        ;-------------------------------------------------
        ; LK UP  PROPORTIONIAL VALUE vs SLO FILT ERROR
        ;
        ; Apply LD2FC idle correction if in idle)
        ;
        ;   (o2 ERR 0 - 96)
        ; TBL = CNT * 1
        ;-------------------------------------------------
DF3C:           LDAB    LD2FC           ; 0.750 IDLE ERR CORR TO ERROR
DF3F:           MUL                     ;
                                        ;
        ;
        ; limit max LK Up value
```

```
        ;
DF40:  LDF40    CMPA    #96             ; MAX LIMIT, SLO FILT ERROR (bin)
DF42:           BLS                     ;
                                        ; ... else
DF44:           LDAA    #96             ; FORCE  MAX LIMIT, SLO FILT ERROR (bin)
DF46:  LDF46    STAA    L0457           ; ???
                                        ;
DF49:           ASLA                    ; n x 2, Scalar
DF4A:           STAA    L0056           ; SLO FILT ERROR (temp)

DF4C:           LDX     #$D4A8          ; PROPORTIONIAL  VAL vs SLO FILT ERROR, (13 li
DF4F:           JSR     LFB49           ; 2d LOOK UP ROUTINE

DF52:           STAA    L00BC           ; PROPORTIONIAL VALUE
        ;-----------------------------------------------

DF54:           LDAB    L0002           ; GET STATUS
DF56:           BPL     LDF61           ; BR IF NOT AT IDLE
                                        ; ... else
DF58:           LDAA    LD2F8           ; 0 sec's PROPORTIONIAL TERM DURATION AT IDLE
DF5B:           PSHA                    ; SAVE TO STACK
                                        ;
DF5C:           LDAA    LD2F9           ; 0.0547, PROPORTIONIAL GAIN FACTOR FOR FLOW A
                                        ;
DF5F:           BRA     LDF72           ; TO MULT IN GAIN FACTOR

        ;
        ; BYPASS NEXT 2 TABLES FOR IDLE CONDITION
        ;

        ;-----------------------------------------------
        ; LK UP PROPORTIONIAL TERM DURATION vs o2 ERROR
        ;
        ; (Skip if in idle conditions, use LD2F8)
        ;
        ; (o2 ERR 0 - 96)
        ; TBL = SEC'S * 40
        ;       msec * 0.04
        ;-------------------------------------------
DF61:  LDF61    LDAA    L0056           ; SLO FILT ERROR (temp)
DF63:           LDX     #$D4B5          ; PROPORTIONIAL TERM DURATION vs o2 ERROR TBL
DF66:           JSR     LFB49           ; 2d look up routine
                                        ;
DF69:           PSHA                    ; SAVE  PROPORTIONIAL TERM DURATION TO STX
        ;-----------------------------------------------


        ;-----------------------------------------------
        ; LK UP PROPORTIONIAL GAIN FLOW FACTOR vs AIR FLOW
        ;   (0 - 64 gms/Sec)
        ;
        ; (Skip if in idle conditions, use LD2F9)
        ;
        ; TBL = SEC'S * 40
        ;       msec * 0.04
        ;-------------------------------------------
DF6A:           LDAA    L00BE           ; AIR FLOW, (gms/sec)
DF6C:           LDX     #$D4C7          ; PROPORTIONIAL GAIN FLOW FACTOR vs AIR FLOW T
DF6F:           JSR     LFB49           ; 2d LOOK UP ROUTINE

        ;
        ; Apply gain factor
        ;
DF72:  LDF72    LDAB    L00BC           ; PROPORTIONIAL FACTORED AIR FLOW
DF74:           MUL                     ; MULT * AIR FLOW
DF75:           ADCA    #00             ; ROUND
```

```
DF77:            STAA    L00BC              ; PROPORTIONIAL  FACTORED AIR FLOW
        ;-----------------------------------------------


        ;-----------------------------------------------
        ; LK UP PROPORTIONIAL TERM DURRATION vs AIR FLOW
        ; (0 - 64 gms/sec)
        ;
        ; (Added to PROPORTIONIAL Vs. o2 ERR)
        ;
        ; TBL = sec's * 40
        ;       msec * 0.04
        ;-----------------------------------------------
DF79:            LDAA    L00BE              ; AIR FLOW, (gms/sec)
DF7B:            LDX     #$D4C2             ; msec's,  PROPORTIONIAL DURRATION OFFSET TBL
                                            ; COUNTS FLOW tbl
DF7E:            JSR     LFB49              ; 2d look up routine
                                            ;
DF81:            PULB                       ; Get PROPORTIONIAL Vs. o2 Err FROM STACK
DF82:            ABA                        ; Prop Vs. Air + PROPORTIONIAL Vs. o2 Err
DF83:            BCC     LDF87              ; IF NO OVERFLOW
                                            ; ... else
DF85:            LDAA    #255               ; FORCE MAX VALUE
                                            ;
DF87:  LDF87     STAA    L0058              ; SAVE msec's PROPORTIONIAL DURATION (temp)
        ;-----------------------------------------------


        ;-----------------------------------------------
        ; LK UP INT DELAY MULT vs SLOW o2 ERROR
        ;   (o2 ERR 0 - 96)
        ;
        ; MULT x INT DELAY MULT (Vs. Slo o2) * LD48F
        ;
        ; TBL = FACTOR * 255
        ;-----------------------------------------------
DF89:            LDAA    L0056              ; AIR FLOW gms/sec
DF8B:            LDX     #$D4CC             ; INT DELAY MULT vs SLOW o2 ERROR tbl (13 line
DF8E:            JSR     LFB49              ; 2d look up routine
                                            ;

           ;
           ; MULT DELAY x INT MULT
           ;
DF91:           LDAB    L00B0               ; GET INTEGRATOR DELAY
DF93:           MUL                         ; INTEGRATOR DELAY  * DELAY MULT
                                            ;
DF94:           LDAB    L0002               ; CHECK STATUS
DF96:           BPL     LDF9F               ; BR IF NOT AT IDLE...
                                            ; ... else
DF98:           ADDA    LD2FA               ; INTEGRATOR DELAY BIAS AT IDLE, (225 msec)
DF9B:           BCC     LDF9F               ; BR NO OVERFLOW
                                            ; ... else
DF9D:           LDAA    #255                ; Force MAX delay
                                            ;
DF9F:  LDF9F    STAA    L00B0               ; SAVE  msec, INTEGRATOR DELAY
DFA1:           STAA    L0458               ; ???
        ;-----------------------------------------------

DFA4:           LDAA    L0008               ; Status
DFA6:           ANDA    #$02                ; b1, BLM ENABLE
DFA8:           LDAB    L000E               ; A/F MODE Word Flag
                                            ;
DFAA:           ANDB    #40                 ; 0100 0000
DFAC:           ABA                         ;
DFAD:           BEQ     LDFBC               ; GO CHECK INT REQUIREMENTS
```

```
                                                ; ... else
DFAF:            CMPA    #66                    ;
DFB1:            BEQ     LDFBC                  ;
                                                ; ... else
DFB3:            LDAA    L00BC                  ; PROPORTIONIAL  FACTORED AIR FLOW
DFB5:            BEQ     LDFC3                  ;
                                                ; ... else
DFB7:            DEC     L00BC                  ; PROPORTIONIAL  FACTORED AIR FLOW
                                                ;
DFBA:            BRA     LDFC3                  ;
    ;-----------------------------------------------


    ;-----------------------------------------------
DFBC:  LDFBC     LDAA    L0056                  ;
DFBE:            CMPA    LD2F4                  ; 4 BITS, ERR THRESH FOR INTAGRATOR CORR
DFC1:            BHI     LDFD1                  ; BR IF
                                                ; ... else
DFC3:  LDFC3     CLR     L00AF                  ; INTEGRATOR DELAY TMR
DFC6:            LDAA    L00BF                  ; PROPORTIONIAL DURATION TMR
DFC8:            CMPA    L0058                  ; Prop DURATION, SEC'S
DFCA:            BLS     LDFF7                  ;
                                                ; ... else
DFCC:            CLR     L00BC                  ; PROPORTIONIAL  FACTORED AIR FLOW
DFCF:            BRA     LDFF7                  ;
;                                               ;
DFD1:  LDFD1     LDAA    L00AF                  ; INTEGRATOR DELAY TIMER
DFD3:            CMPA    L00B0                  ; INTEGRATOR DELAY
DFD5:            BCS     LDFDA                  ; BR IF IND DLY TMR ...
                                                ; ... else
DFD7:            CLRA                           ;
DFD8:            BRA     LDFDB                  ;

        ;-----------------------------------
        ; CK INTEGRATOR LMTS
        ;
        ;-----------------------------------
DFDA:  LDFDA     INCA                           ; INCR TMR
DFDB:  LDFDB     STAA    L00AF                  ; INTEGRATOR DELAY TIMER
DFDD:            BNE     LDFF7                  ; BR IF TMR L.T REQ TIME
                                                ; ... else
DFDF:            LDAA    L00A4                  ; CURRENT INTEGRATOR VAL
                                                ;
DFE1:            LDAB    L0008                  ;
DFE3:            BITB    #$02                   ; b1, BLM ENABLE
DFE5:            BNE     LDFEF                  ; BR IF b1
                                                ; ... else
DFE7:            CMPA    LD2C4                  ; CLS lP Max INTAGRATOR VAL, 158
DFEA:            BEQ     LDFF5                  ; BR IF INT L.T. MAX
                                                ; ... else
DFEC:            INCA                           ;
DFED:            BRA     LDFF5                  ; GO SAVE INTEGRATOR
                                                ;
                                                ;
DFEF:  LDFEF     CMPA    LD2C3                  ; 40, CLS LP MIN INTAGRATOR VAL
DFF2:            BEQ     LDFF5                  ; BR IF INT L.T. MIN
                                                ; ... else
DFF4:            DECA                           ;
DFF5:  LDFF5     STAA    L00A4                  ; CURRENT INTIGRATOR
                                                ;
DFF7:  LDFF7     LDAA    L00BC                  ; PROPORTIONIAL FACTORED AIR FLOW
                                                ;
DFF9:            LDAB    L000E                  ; A/F MODE Word Flag
DFFB:            BITB    #$40                   ; b6, RICH
DFFD:            BEQ     LE008                  ; BR IF NOT b6, RICH
                                                ; ... else
```

```
        ;-----------------------------------------
        ; PROM PORTION OF ALGO
        ; $E000 - $FFFF
        ;-----------------------------------------
 ;
                ORG     $E000
 ;
 ;
E000:           ANDA    $90,X               ;
E002:           CPX     L2409               ;
E005:           CLRA                        ;
E006:           BRA     LE00E               ;
                                            ;
E008:           ADDA    L00A4               ; INTIGRATOR
E00A:           BCC     LE00E               ;
                                            ; ... else
E00C:           LDAA    #$00FF              ;
                                            ;
E00E:   LE00E   SUBA    #$0080              ;
E010:           STAA    L00B1               ;
                                            ;
E012:           LDAA    L0000               ;
E014:           LDAB    L0009               ;
E016:           BITA    #$10                ;
E018:           BEQ     LE01E               ;
                                            ; ... else
E01A:           ANDB    #$FD                ;
E01C:           BRA     LE041

E01E:   LE01E   BITB    #$01
E020:           BNE     LE043
                                            ; ... else
E022:           LDAA    L0881
E025:           BITA    #$20
E027:           BEQ     LE03F
                                            ; ... else
E029:           LDAA    L0001
E02B:           BMI     LE043
                                            ; ... else
E02D:           LDAB    L0095               ; PUMP DELAY TIMER
E02F:           INCB                        ; INCR TIMER
E030:           CMPB    LD55C               ; FUEL PUMP DELAY TIME FM IGN ON TO TEST BGN
E033:           BLS     LE044               ; BR IF NOT TIMED OUT
                                            ; ... else
E035:           LDAA    L0046               ; BATTERY VDC

E037:           LDAB    L0009

E039:           CMPA    #40                 ; 4 VDC
E03B:           BCC     LE03F               ; BR IF Vbat LT 4 VDC
                                            ; ... else
E03D:           ORAB    #$02
E03F:   LE03F   ORAB    #$01
E041:   LE041   STAB    L0009

E043:   LE043   CLRB
E044:   LE044   STAB    L0095

E046:           JMP     LDDDE


E049:   LE049   LDAA    L0801               ;  MCU2 I/O

E04C:           LDAB    L000F
E04E:           ANDB    #$E7                ; CLR b7 & b3
```

```
E050:           BITA    #$10            ; b4, 1 = PK/NEUT
E052:           BEQ     LE056           ; BR IF NOT b1
                                        ; ... else
E054:           ORAB    #$10            ; SET b4

E056:   LE056   TSTA
E057:           BMI     LE05B
                                        ; ... else
E059:           ORAB    #$08            ; SET b3
E05B:   LE05B   STAB    L000F

E05D:           LDAB    L0002           ; STATUS

E05F:           LDAA    L000F

E061:           BITB    #$20            ; b5, CLOSED LOOP
E063:           BEQ     LE07A           ; BR IF NOT b5
                                        ; ... else
E065:           LDAB    L001C           ; RPM/25
E067:           CMPB    LD5D5           ; 1500 RPM, ALDL RESET TRHRESH
E06A:           BLS     LE07A           ; BR IF RPM LT 1500
                                        ; ... else
E06C:           LDAB    L00DF
E06E:           BITB    #$08            ; b3
E070:           BNE     LE07A           ; BR IF b3
                                        ; ... else
E072:           ORAB    #$08            ; SET b3
E074:           STAB    L00DF

E076:           ANDA    #$FE            ; CLR b0,

E078:           BRA     LE088


E07A:   LE07A   BITA    #$01            ; b0
E07C:           BNE     LE09D           ; BR IF NOT b0
                                        ; ... else
E07E:           BITA    #$02            ; b1
E080:           BNE     LE094           ; BR IF b1
                                        ; ... else
E082:           LDAB    L0000
E084:           BITB    #$20            ; b5
E086:           BEQ     LE09D           ; BR IF NOT b5
                                        ; ... else
E088:   LE088   ORAA    #$02            ; SET b1
E08A:           STAA    L000F

E08C:           LDAB    LD5CE           ; 200, RETRACT PULSE RESET
E08F:           STAB    L00FD           ; CURRENT DISPLAY IAC STEPS

E091:           CLRB
E092:           STAB    L00CB           ; RESET CURRENT IAC STEPS

E094:   LE094   LDAB    L00FD           ; CURRENT DISPLAY IAC STEPS
E096:           BEQ     LE099
                                        ; .... else
E098:           RTS


E099:   LE099   ORAA    #$01            ; SET b0
E09B:           STAA    L000F           ;
                                        ;
E09F:           BITB    #$10            ; b4
E0A1:           BNE     LE0A7           ; BR b4
                                        ; ... else
E0A3:           LDAB    L0001           ;
```

```
E0A5:           BMI     LE0BA               ; b7
                                            ; ... else
E0A7:   LE0A7   LDAA    LD5C3               ;  .. Sec's STEPPER MOTOR PK TO RUN DELAY
E0AA:   LE0AA   STAA    L00D1               ;
                                            ;
E0AC:           LDAB    LD5C2               ; 146 STEPS, MOTOR PK POSIT

E0AF:           LDAA    L0014               ; CURRENT ERROR flag 3
E0B1:           BITA    #$10                ; b4, PROM ERR
E0B3:           BNE     LE0B7               ; BR IF b4
                                            ; ... else
E0B5:           STAB    L00CB
E0B7:   LE0B7   JMP     LE239               ; TO HEADS UP CHECK


E0BA:   LE0BA   LDAA    L00D1
E0BC:           BEQ     LE0C1

E0BE:           DECA
E0BF:           BRA     LE0AA
 ;
E0C1:   LE0C1   LDAB    L0005
E0C3:           LDAA    LD008               ; 0d COLD START THROTLE KICKER ENABLE
E0C6:           BEQ     LE0DF
                                            ; ... else
E0C8:           LDAA    L00E3               ; COOL TEMP, (tbl 3)
E0CA:           CMPA    LD5BE               ; 200c FOR KICKER ON
E0CD:           BLS     LE0D3
                                            ; ... else
E0CF:           ORAB    #$0004              ; SET b2

E0D1:           BRA     LE0E1


E0D3:   LE0D3   CMPA    LD5BF               ; 200c FOR TPS KICKER OFF
E0D6:           BCC     LE0E1               ;
                                            ; ... else
E0D8:           LDAA    L0049               ; CURRENT TPS VALUE
E0DA:           CMPA    LD5C0               ;  0 VDC TPS FOR TPS KICKER OFF
E0DD:           BLS     LE0E1               ; BR IF TPS LT THRESH
                                            ; ... else
E0DF:   LE0DF   ANDB    #$FB
E0E1:   LE0E1   STAB    L0005

+E0E3:           LDAB    L000F
E0E5:           BITB    #$04
E0E7:           BNE     LE101
                                            ; ... else
E0E9:           ORAB    #$04                ; SET b2
E0EB:           STAB    L000F


                ;-------------------------------------------
                ; POSIT AFTER MOTOR RESET vs BARO
                ;
                ; TBL = STEPS
                ;-------------------------------------------
E0ED:           JSR     LFD18               ; GET PROCESSED BARO VALUE IN A REG

E0F0:           LDX     #$D606              ; POSIT AFTER MOTOR RESET vs BARO, (5 LINE)
E0F3:           JSR     LFB45

E0F6:           STAA    L00E4               ; LK'ed UP STEPS
E0F8:           ADDA    LD5C1               ; 25 STEPS, INT NON VOL RAM FAIL FOR A/C ON ST
E0FB:           BCC     LE0FF               ; BR IF NOT OVERFLOW
                                            ; ... else
```

```
E0FD:           LDAA    #255            ; FORCE MAX VALUE
E0FF:   LE0FF   STAA    L00C1           ;


E101:   LE101   LDAA    L000F           ;
                                        ;
E103:           LDAB    L0008           ; STATUS
E105:           BITB    #$08            ; b3, FUEL C/O
E107:           BEQ     LE11A           ; BR IF NOT b3
                                        ; ... else
E109:           LDX     LD5D3           ; 40, DECEL STALL Fuel Cut Off  STP'S
E10C:           CPX     L00C2           ;
E10E:           BCS     LE116           ; BR IF STEPS GT 40
                                        ; ... else
E110:           STX     L00C2           ;
E112:           ORAB    #$20            ; SET b5

E114:           STAB    L0008           ; STATUS
                                        ;
E116:   LE116   ORAA    #$40            ; SET b7
E118:           STAA    L000F           ;
                                        ;
E11A:   LE11A   LDAB    LD5C5           ; 500 RPM TO EXIT PWR STEER STALL
E11D:           TSTA                    ;
E11E:           BMI     LE123           ;
                                        ; ... else
E120:           LDAB    LD5C4           ; 425 RPM PWR STEER STALL
E123:   LE123   CMPB    L001F           ; RPM/12.5
E125:           BCC     LE132           ; BR IF RPM GT THRESH
                                        ; ... else
E127:           TSTA                    ;
E128:           BPL     LE149           ;
                                        ; ... else
E12A:           ANDA    #$7F            ; CLLR b7
E12C:           ORAA    #$40            ; SET b2
E12E:           STAA    L000F           ;

E130:           BRA     LE149


E132:   LE132   ORAA    #$80            ; SET b7
E134:           ANDA    #$BF            ; CLR b6
E136:           STAA    L000F


        ;-----------------------------------------
        ; POSIT AFER MOTOR RESET vs BARO
        ;
        ; TBL = STEPS
        ;-----------------------------------------
E138:           JSR     LFD18           ; GET PROCESSED BARO VALUE IN A REG
                                        ;
E13B:           LDX     #$D60A          ; POSIT AFER MOTOR RESET vs BARO (4 LINES)
                                        ;
E13E:           JSR     LFB45           ; 2d LOOK UP
                                        ;
E141:           LDAB    L00C4           ; GET STEPS
E143:           CBA                     ; COMP B to LK'ED UP VAL
E144:           BCS     LE149           ; BR IF LOOKED UP VAL GT B
                                        ; ... else
E146:           CLRB                    ; CLEAR B
E147:           STD     L00C4           ; SAVE STEPS


E149:   LE149   LDAB    LD5F1           ; %THROT FOLLOWER, NOT IN PK/NEUT
                                        ;
```

```
E14C:           LDAA    L000F           ;
E14E:           BITA    #$10            ; b2
E150:           BEQ     LE155           ;
                                        ; ... else
E152:           LDAB    LD5F0           ; %THROT FOLLOWER IN PK/NEUT
                                        ;
E155:   LE155   LDAA    L0049           ; CURRENT TPS VALUE
E157:           SUBA    LD5EF           ; %TPS FOR THROT FOLLOWER BIAS
E15A:           BCC     LE15D           ;
E15C:           CLRA                    ;
E15D:   LE15D   MUL                     ;
E15E:           ASLD                    ;
E15F:           BCS     LE172           ;
                                        ; ... else
E161:           ASLD                    ;
E162:           BCS     LE172           ;
                                        ; ... else
E164:           ASLD                    ;
E165:           BCS     LE172           ;
                                        ; ... else
E167:           STAA    L00C8           ;
E169:           CMPA    L00C6           ;
E16B:           BLS     LE17E           ; BR IF ...
                                        ; ... else
E16D:           CMPA    LD5F2           ; MAX THROT FOLLOWER BIAS, 60 STEPS
E170:           BCS     LE175           ;
                                        ; ... else
E172:   LE172   LDAA    LD5F2           ; MAX THROT FOLLOWER BIAS, 60 STEPS
E175:   LE175   CLRB                    ; ZERO LSB
E176:           STD     L00C6

E178:           LDAA    L000F
E17A:           ORAA    #$40            ; SET b6
E17C:           STAA    L000F


                *===========================================
                * IAC MOTOR POSIT vs COOLANT
                * (IN STEPS) ASDZ, 5.7L V8 TYPE $42 ECM
                *
                *
                * TBL = STEPS
                *===========================================
E17E:   LE17E   LDX     #$D5F5          ; IAC MOTOR POSIT vs COOLANT (17 LINES)
                                        ;
E181:           LDAA    L00E3           ; COOL TEMP, (tbl 3)
E183:           JSR     LFB49           ; 2d LOOK Up
                                        ;
E186:           LDAB    L00DE           ;
E188:           BITB    #$20            ; b5
E18A:           BNE     LE1BA           ; BR IF b5
                                        ; ... else
E18C:           LDAB    L005F           ; IAC ENABLE TIMER
E18E:           CMPB    LD5D7           ; 5 sec FOR ENABLE IAC KICK DN
E191:           BLS     LE1C0           ; BR IF NOT TIMED OUT
                                        ; ... else
E193:           LDAB    LD5D8           ; 25 KICK DN ADJ STEPS
E196:           CMPB    L00C2           ; 194 ?
E198:           BCS     LE19F           ;
                                        ; ... else
E19A:           STAB    L00C2
E19C:           CLR     L00C3

E19F:   LE19F   LDAB    L00DE
E1A1:           ORAB    #$20            ; SET b5
E1A3:           STAB    L00DE
```

```
E1A5:           BITB    #$10            ; b4
E1A7:           BEQ     LE1B4
                                        ; ... else
E1A9:           LDAB    LD303           ; 30 Steps IAC Bias for hot restart
E1AC:           ADDB    L00C2           ;
E1AE:           BCC     LE1B2           ; BR IF NO OVERFLOW
                                        ; ... else
E1B0:           LDAB    #255            ; FORCE MAX VALUE
E1B2:   LE1B2   STAB    L00C2

E1B4:   LE1B4   LDAB    L000F
E1B6:           ORAB    #$40            ; SET b6
E1B8:           STAB    L000F
                                        ; ... else
E1BA:   LE1BA   SUBA    LD5D8           ; 25, KICK DN ADJ STEPS
E1BD:           BCC     LE1C0           ; BR IF NO UNDERFLOW
                                        ; ... else
E1BF:           CLRA                    ; ZERO STEPS ADJ
E1C0:   LE1C0   TAB                     ;
E1C1:           SUBA    L00CC           ;
E1C3:           BCC     LE1C8           ;
                                        ; ... else
E1C5:           STAB    L00CC           ;
E1C7:           CLRA                    ;
E1C8:   LE1C8   STAA    L00CE           ;
                                        ;
E1CA:           LDAB    L00DE           ;
E1CC:           BITB    #$10            ; b4
E1CE:           BEQ     LE1DA           ; BR IF NOT b4
                                        ; ... else
E1D0:           LDAA    LD303           ; 30 Steps IAC Bias for hot restart
                                        ;
E1D3:           CLRB                    ;
E1D4:           CMPA    L00C2           ;
E1D6:           BLS     LE1DA           ; BR IF STEPS ....
                                        ; ... else
E1D8:           STD     L00C2           ;
                                        ;
E1DA:   LE1DA   LDAA    L00CF           ;
E1DC:           LDAB    L000F           ;
E1DE:           BPL     LE1EA           ;
                                        ; ... else
E1E0:           LDAA    LD5C5           ; 500 RPM TO EXIT PWR STEER STALL
E1E3:           ADDA    LD5CD           ; 25 RPM, DEAD BAND
E1E6:           BCC     LE1EA           ; BR IF RPM OVERFLOW
                                        ; .... else
E1E8:           LDAA    #255            ; FORCE MAX VALUE, 3188 RPM
E1EA:   LE1EA   CMPA    L001F           ; RPM/12.5
E1EC:           BHI     LE1F2           ;
                                        ; .... else
E1EE:           ANDB    #$DF            ; CLEAR b5

E1F0:           BRA     LE1F4


E1F2:   LE1F2   ORAB    #$20            ;
                                        ;
E1F4:   LE1F4   LDAA    L00E4           ; STEPS
                                        ;
E1F6:           STAB    L000F           ;
E1F8:           BITB    #$08            ; b3
E1FA:           BEQ     LE204           ; BR IF NOT b3
                                        ; .... else
E1FC:           CMPA    L00C1           ;
E1FE:           BLS     LE202           ;
```

```
                                        ; .... else
E200:           STAA    L00C1           ;
E202:   LE202   LDAA    L00C1           ;

E204:   LE204   LDAB    L0005           ;
E206:           BITB    #$04            ; b2
E208:           BNE     LE235           ; BR IF b2
                                        ; .... else
E20A:           LDAB    L000F           ; STATUS, b4 = PK.NEUT

E20C:           ADDA    L00CE           ;
E20E:           BCS     LE229           ; BR IF ... OVERFLOW
                                        ; .... else
E210:           ADDA    L00C2           ;
E212:           BCS     LE229           ; BR IF ... OVERFLOW
                                        ; .... else
E214:           ADDA    L00C4           ;
E216:           BCS     LE229           ; BR IF ... OVERFLOW
                                        ; .... else
E218:           ADDA    L00C6
E21A:           BCS     LE229           ; BR IF ... OVERFLOW
                                        ; .... else
E21C:           ADDA    L00CD
E21E:           BCS     LE229           ; BR IF ... OVERFLOW
                                        ; .... else
E220:           BITB    #$08
E222:           BEQ     LE22B
                                        ; .... else
E224:           ADDA    LD5D6           ; DESIRED MP A/C ADJ BIAS
E227:           BCC     LE22B
                                        ; .,.. else
E229:   LE229   LDAA    #$255           ; FORCE STEPS MAX

E22B:   LE22B   BITB    #$10            ; b4, IN PK/NEUT
E22D:           BEQ     LE235           ; BR IF NOT b4
                                        ; ... else
E22F:           SUBA    LD5D9           ; 1 STEP,PK/NEUT POSIT DIFF
E232:           BCC     LE235           ; BR IF UNDER FLOW
                                        ; ... else
E234:           CLRA                    ; ZERO IAC STEPS
E235:   LE235   STAA    L00CB           ; SAVE IAC STEPS
E237:           STAA    L00CB           ; SAVE IAC STEPS


        ;---------------------------------
        ; CHECK FOR HEADS UP ON LINE
        ;
        ;---------------------------------
E239:   LE239   LDAA    L0000           ; STATUS MODE WD
E23B:           BITA    #$02            ; b1
E23D:           BEQ     LE242           ; BR IF NOT b1
                                        ; ... else
E23F:           JSR     L5803           ; TO HEADS UP <-----<<<<
                                        ; ... else
E242:   LE242   RTS
        ;-------------------------------------------------------


        ;-------------------------------------------------
        ; VECTOR (RESET)
        ;
        ;-------------------------------------------------
E243:           LDS     #$00DC          ; SET USER STACK

E246:           JSR     LFD39           ; SHORT TIME DELAY
```

```
E249:           LDX     #$000A
E24C:           STX     LBC3C           ; ECU HARDWARE

E24F:           LDX     #$BC00          ; ECU HARDWARE
E252:           CLRA
E253:           CLRB
E254:   LE254   STD     0,X

E256:           INX
E257:           INX
E258:           CPX     #$BC38          ; ECU HARDWARE
E25B:           BNE     LE254
                                        ; ... else
E25D:           LDX     #$0199
E260:           STX     LBC0C           ; ECU HARDWARE

E263:           LDX     #$00D2
E266:   LE266   CLR     0,X
E268:           DEX
E269:           CPX     #$FFFF
E26C:           BNE     LE266

E26E:           LDAA    LD006           ; Opt Word 2, 1101 0000
E271:           BITA    #$40            ; b6, 1 = NO ENABLE MOTOR R/S DUE TO RESTART
E273:           BEQ     LE27B           ;
                                        ; ... else
E275:           LDAA    L000F
E277:           ORAA    #$01
E279:           STAA    L000F

E27B:   LE27B   LDAB    L0880
E27E:           STAB    L0880
E281:           BMI     LE28A
                                        ; ... else
E283:           JSR     LFD2C
E286:           CMPA    L00EA
E288:           BEQ     LE2AE
                                        ; ... else
E28A:   LE28A   LDX     #$00FF
E28D:   LE28D   CLR     0,X
E28F:           DEX
E290:           CPX     #$00DC
E293:           BNE     LE28D
                                        ; ... else
E295:           LDAA    LD5CF           ; 35,  INIT MOTOR POSIT no A/C
E298:           STAA    L00E4           ; STEPS

E29A:           LDAA    LD5C2           ; 146 STEPS, MOTOR PK POSIT       <----<<<<<
E29D:           STAA    L00FD           ; CURRENT DISPLAY IAC STEPS

E29F:           LDAA    L000F
E2A1:           ANDA    #$FE
E2A3:           STAA    L000F

E2A5:           JSR     LFDBD

E2A8:           LDAA    L0008           ; STATUS
E2AA:           ORAA    #$40            ; b6,
E2AC:           STAA    L0008

E2AE:   LE2AE   LDAA    L00E4
E2B0:           ADDA    LD5C1           ; 25 STEPS, INT NON VOL RAM FAIL FOR A/C ON ST
E2B3:           BCC     LE2B7
                                        ; ... else
E2B5:           LDAA    #$00FF
E2B7:   LE2B7   STAA    L00C1
```

```
E2B9:           LDAA    L00DF
E2BB:           ANDA    #$C0
E2BD:           STAA    L00DF


        ;---------------------------------
        ; CHECK FOR HEADS UP ON LINE
        ;
        ;---------------------------------
E2BF:           LDX     L5800           ; HEADS UP  <-----<<<<
E2C2:           CPX     #$07E58         ; CHECK IF HEADS UP IS PRESENT
E2C5:           BNE     LE2CA           ; BR IF NO HEADS UP ON LINE
                                        ; ... else
E2C7:           JSR     L5815           ; TO SET IF HEADS UP  <-----<<<<
                                        ;
        ;---------------------------------
        ; CHECK BYTE & CHECK SUM ROUTINE
        ;
        ;---------------------------------
E2CA:   LE2CA   LDX     #$E000          ; END OF EPROM AREA +1
E2CD:           STX     L0055           ;
                                        ;
E2CF:           LDX     #$D004          ; CK BYTE ($42)
E2D2:           JSR     LE403           ; GO DO CK SUM ????
                                        ;
E2D5:           SUBD    LD000           ; CK SUM, (Start of EPROM)
E2D8:           BNE     LE2E1           ;
                                        ; ... else
E2DA:           LDAA    LD004           ; CK BYTE ($42)
E2DD:           CMPA    #$42            ; CHECK IF TYPE $42
E2DF:           BEQ     LE305           ; BR IF TYPE $42
                                        ; ... else
E2E1:   LE2E1   LDAA    LD004           ; CK BYTE ($42)
E2E4:           CMPA    #$AA            ; CK FOR ENGINEERING BYPASS
E2E6:           BEQ     LE305           ; BR IF $AA
                                        ; ... else
E2E8:           JSR     LFBF4

E2EB:           LDAA    L0014           ; CURRENT ERROR flag 3
E2ED:           ORAA    #$10            ; Set b4, PROM ERROR
E2EF:           STAA    L0014           ; CURRENT ERROR flag 3

E2F1:           LDAA    L00E2           ; ERROR flag 3
E2F3:           ORAA    #$10            ; Set b4, PROM ERROR
E2F5:           STAA    L00E2           ; ERROR flag 3

E2F7:           JSR     LFD2C
E2FA:           STAA    L00EA

E2FC:           LDAA    #$000C
E2FE:           JSR     LFEFE
E301:   LE301   CMPA    #$0099
E303:           BCC     LE301

E305:   LE305   LDX     #$B92A          ; ECU HARDWARE
E308:           STX     LBC3C           ; ECU HARDWARE

E30B:           LDAA    #$0005
E30D:           JSR     LFEFE

E310:           STAA    L002C           ; MAP, Kpa
E312:           STAA    L0029           ; FILTERED MAP
E314:           SUBA    #$001A
```

```
        ;
        ; GET MAP
        ;
E316:           LDAB    #$97
E318:           JSR     LFC20

E31B:           STAA    L0026           ; S/D MAP
E31D:           STAA    L002F           ; FILT MAP

E31F:           JSR     LFC7F           ; GET BARO or DEFAULT
                                        ;
E322:           LDAA    L00E3           ; COOL TEMP, (tbl 3);
E324:           PSHA                    ;
E325:           JSR     LFD3A           ;
                                        ;
E328:           STAA    L0024           ; 1K PU COOL

E32A:           PULB                    ;
E32B:           CMPB    LD300           ; 110c, (230f), SHT DWN TEMP FOR HOT RESTART E
E32E:           BCC     LE33B           ;
                                        ; .. else;
E330:           CMPA    LD301           ;  90c, (194f), RESTART TEMP FOR HOT RESTART E
E333:           BCC     LE33B           ; BR IF COOL GT THRESH
                                        ; ... else
E335:           LDAB    L00DE           ;
E337:           ORAB    #$10            ; b4
E339:           STAB    L00DE           ;

E33B:   LE33B   JSR     LFC8A           ;

E33E:           STAA    L0021           ; COOLANT
E340:           STAA    L0022           ; COOLANT

E342:           LDAA    LD28D           ; o2 FILT INIT 451 mvdc
E345:           STAA    L003F           ; o2 VALUE
E347:           STAA    L003E           ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
E349:           STAA    L0041           ; FILT MJR LP o2
E34B:           STAA    L0043           ; o2 VALUE

E34D:           LDAA    #$000B
E34F:           JSR     LFEFE

E352:           STAA    L0048           ; TPS

E354:           LDAA    LD289           ; Min TPS IN %, (25%)
E357:           STAA    L004F           ;
                                        ;
E359:           JSR     LFCD8
E35C:           STAA    L004B
E35E:           STAA    L004A
E360:           STAA    L004D
E362:           JSR     LFEFC
                                        ;
E365:           STAA    L0045           ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
                                        ;
E367:           LDD     LBC06           ; ECU HARDWARE
E36A:           STD     L0092           ;
                                        ;
E36C:           LDAA    L00FD           ; CURRENT DISPLAY IAC STEPS
E36E:           STAA    L00CB           ; SAVE IAC STEPS
                                        ;
E370:           LDAA    L00DE           ;
E372:           BITA    #$04            ; b2
E374:           BNE     LE37C           ; BR IF b2
                                        ;
E376:           LDAB    L0009           ;
```

```
E378:           ORAB    #$01                ;
E37A:           STAB    L0009

E37C:   LE37C   ANDA    #$FB                ; CLR b2
E37E:           STAA    L00DE

E380:           LDAA    LD2AA               ; AFR (STOCH)14.7:1
E383:           STAA    L00A5               ; AFR
E385:           STAA    L00B6               ; AFR

E387:           LDAA    #14
E389:           STAA    L0070

E38B:           LDAA    #128
E38D:           STAA    L0071
E38F:           STAA    L00A3

E391:           LDAA    #20
E393:           STAA    L007B

E395:           LDAA    #160
E397:           STAA    L0037

        ;
        ; CHECK BLM MAX/MIN'S
        ;
E399:           LDX     #$00ED              ; BLM VALUE ADDRESS
                                            ;
E39C:           LDAA    LD2BB               ; 135d, MAX BLM VALUE AT INIT
E39F:           LDAB    LD2BC               ; 125d, MIN BLM VALUE AT INIT
E3A2:   LE3A2   CMPA    0,X                 ;
E3A4:           BCC     LE3A8               ; BR IF BLM GT
                                            ; ... else
E3A6:           STAA    0,X                 ;
E3A8:   LE3A8   CMPB    0,X                 ;
E3AA:           BLS     LE3AE               ; BR IF BLM GT
                                            ; ... else
E3AC:           STAB    0,X                 ;
E3AE:   LE3AE   INX                         ; NEXT ADDRESS
E3AF:           CPX     #$00FC              ;
E3B2:           BLS     LE3A2               ;
                                            ; ... else
E3B4:           JSR     LFF03               ;
E3B7:           BCC     LE3FD               ;
                                            ; ... else
E3B9:           CLRA                        ;
E3BA:           JSR     LFEFE               ;

E3BD:           CMPA    #160                ;
E3BF:           BLS     LE3FD               ;
                                            ; ... else
E3C1:           JSR     LFEFC               ;
E3C4:           CMPA    #100                ;
E3C6:           BCC     LE3FD               ;
                                            ; ... else
E3C8:           LDAA    L0007               ;
E3CA:           ORAA    #$01                ; SET b1
E3CC:           STAA    L0007               ;

E3CE:           LDAA    #204                ;
E3D0:           STAA    L0021               ; COOLANT
E3D2:           STAA    L0023               ;

E3D4:           LDX     #$00DC              ;
E3D7:           TXS                         ;
E3D8:           LDAA    #$00AA              ;
```

```
E3DA:   LE3DA   INX                     ;
E3DB:           STAA    0,X             ;
E3DD:           CPX     #$00FF          ;
E3E0:           BCS     LE3DA           ;
                                        ; ... else
E3E2:           LDX     #$E000          ;
E3E5:           STX     L0055           ;
                                        ;
E3E7:           LDX     #$D000          ; CK SUM, (Start of EPROM)
                                        ;
E3EA:           BSR     LE403           ;
E3EC:           STD     L0016           ;

E3EE:           LDAA    #$00F0          ;
E3F0:           STAA    L0055           ;
E3F2:           BSR     LE403           ;

E3F4:           STD     L0012           ; CURRENT ERR FLG 1
                                        ;
E3F6:           CLR     L0055           ;
E3F9:           BSR     LE403           ;

E3FB:           STD     L0014           ; CURRENT ERROR flag 3
                                        ;
E3FD:   LE3FD   LDX     LBC38           ; ECU HARDWARE

E400:           JMP     LE55B           ;

        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
E403:   LE403   CLRA                    ;
E404:           CLRB                    ;
E405:           STX     L0051           ;
E407:   LE407   INC     L0052           ;
E40A:           BPL     LE41D           ;
                                        ; ... else
E40C:           CLR     L0052           ;
E40F:           PSHA                    ;
E410:           PSHB                    ;

E411:           LDD     LBC3C           ; ECU HARDWARE
E414:           EORB    #$04            ; TOGGLE b2
E416:           BSR     LE426           ;

E418:           STD     LBC3C           ; ECU HARDWARE

E41B:           PULB                    ;
E41C:           PULA                    ;
E41D:   LE41D   ADDB    0,X             ;
E41F:           ADCA    #$00            ;
E421:           INX                     ;
E422:           CPX     L0055           ;
E424:           BNE     LE407           ;
                                        ; ... else
E426:   LE426   RTS                     ;
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; VECTOR HANDLER
        ;
        ;-------------------------------------------------
E427:           RTI
        ;-------------------------------------------------
```

```
        ;-------------------------------------------------
        ; VECTOR HANDLER
        ;
        ;-------------------------------------------------
E428:           LDD     LBC38               ;  ECU HARDWARE
E42B:           BITA    #$10                ;  b4
E42D:           BNE     LE430               ;
                                            ; ... else
E42F:           RTI                         ;
        ;-------------------------------------------------


E430:   LE430   TSX                         ;
E431:           CPX     #$00D6              ;
E434:           BEQ     LE43C               ;
                                            ; .... else
E436:           LDAB    L0000               ;
E438:           ORAB    #$01                ; b0
E43A:           STAB    L0000               ;
                                            ;
E43C:   LE43C   LDS     #$00DC              ; SET USER STACK

E43F:           LDAB    L0002               ; FLAG WD
E441:           BITA    #$08                ; b3, DIAG MODE SW LT 2 VDC
E443:           BEQ     LE447               ; BR IF NOT b3
                                            ; .... else
E445:           ORAB    #$04                ; SET b2

E447:   LE447   BITA    #$20                ;
E449:           BEQ     LE44D               ;
                                            ; .... else
E44B:           ORAB    #$01                ; SET b0
E44D:   LE44D   STAB    L0002               ;

E44F:           LDAA    L0000               ;
E451:           BITA    #$10                ;
E453:           BEQ     LE459               ;

E455:           ANDB    #$FB                ; CLR b2
E457:           STAB    L0002               ;

E459:   LE459   LDAA    L0007               ;
E45B:           ASRA                        ;
E45C:           BCS     LE464               ;
                                            ; .... else
E45E:           LDAA    L0014               ; CURRENT ERROR flag 3
E460:           BITA    #$10                ; b4
E462:           BNE     LE46E               ; BR IF b4, EPROM ERROR
                                            ; .... else
E464:   LE464   LDAA    #$00BF              ;
E466:           JSR     LFBF6               ;

E469:           LDAA    #$0040              ;

E46B:           JSR     LFC01               ;

E46E:   LE46E   LDX     L00EB               ; HOT RE-START TIMER

E470:           LDAA    L0070               ;
E472:           INCA                        ;
E473:           CMPA    #160                ;
E475:           BNE     LE49A               ;
                                            ; ... else
E477:           LDAB    L0007               ;
E479:           EORB    #$20                ; TOGGLE b5
```

```
E47B:           STAB    L0007           ;

E47D:           LDAA    L00DE           ;

E47F:           LDAB    L0001           ;
E481:           BMI     LE48A           ;
                                        ; .... else
E483:           CLR     L005F           ;
E486:           ANDA    #$DF            ; CLEAR b5

E488:           BRA     LE497           ;


E48A:   LE48A   INC     L005F           ; 1 sec/bit TIMER
E48D:           INX                     ; INCR 1 SEC CNT'R
E48E:           STX     L00EB           ; Hot restart TIMER
E490:           CPX     LD304           ; 10 Sec's for Hot restart enabled
E493:           BCS     LE497           ;  BR IF  Hot restart TIME LT 10 SEC'S
                                        ; .... else
E495:           ANDA    #$EF            ; CLEAR b4
E497:   LE497   STAA    L00DE           ;

E499:           CLRA                    ;

E49A:   LE49A   STAA    L0070           ;
E49C:           ANDA    #$1F            ; CLEAR b5, 6 & 7
E49E:           BNE     LE4A9           ;
                                        ; ... else
        ;-----------------------------------
        ; CHECK HEADS UP STATUS
        ;
        ;-----------------------------------
E4A0:           LDAB    L0000           ; STATUS MODE WD
E4A2:           BITB    #$02            ; b1
E4A4:           BEQ     LE4A9           ; BR IF NOT b1
                                        ; ... else
E4A6:           JSR     L580F           ; GOTO HEADS UP  <-----<<<<
                                        ;
E4A9:   LE4A9   LDAA    L0007           ;
E4AB:           ASRA                    ;
E4AC:           BCC     LE4B1           ;
                                        ; ... else
E4AE:           JMP     LFE69
        ;-------------------------------------------------


E4B1:   LE4B1   LDD     #$0501          ; SET UP A/D
E4B4:           JSR     LFBCE           ; A/D ROUTINE
E4B7:           JSR     LEC56           ;

E4BA:           LDAA    L0002           ; FLAG WD
E4BC:           ASRA                    ; SHIFT RIGHT
E4BD:           BCC     LE4C4           ; BR IF NOT b0

E4BF:           ASLA                    ; LEFT ONCE
E4C0:           STAA    L0002           ; FLAG WD

E4C2:           BRA     LE4D7           ;

                                        ;
E4C4:   LE4C4   LDAB    L0037           ;
E4C6:           INCB                    ;
E4C7:           CMPB    #159            ;
E4C9:           BLS     LE4D3           ;
                                        ; ... else
E4CB:           LDAB    L0001           ;
```

```
E4CD:           ANDB    #$EF                ; CLR b4
E4CF:           STAB    L0001               ;

E4D1:           LDAB    #159                ;
E4D3:   LE4D3   STAB    L0037               ;

E4D5:           BRA     LE4FA


E4D7:   LE4D7   LDAB    L0001               ;
E4D9:           BITB    #$10                ; b4
E4DB:           BNE     LE4EA               ;
                                            ; ... else
E4DD:           ORAB    #$10                ; b4
E4DF:           STAB    L0001               ;

E4E1:           LDX     LBC02               ; ECU HARDWARE
E4E4:           INX                         ;
E4E5:           STX     L003C               ;

E4E7:           INX                         ;
E4E8:           STX     L003A               ;

E4EA:   LE4EA   CLR     L0037               ;

E4ED:           LDX     L003A               ;
E4EF:           STX     L0038               ;

E4F1:           LDX     L003C               ;
E4F3:           STX     L003A               ;

E4F5:           LDX     LBC02               ; ECU HARDWARE
E4F8:           STX     L003C               ;

        ;-----------------------------------
        ; CK HEADS UP FLAG
        ;
        ;-----------------------------------
E4FA:   LE4FA   LDAA    L0000               ; STATUS MODE WD
E4FC:           BITA    #$02                ; b1
E4FE:           BEQ     LE503               ; BR IF NOT b1
                                            ; ... else
E500:           JSR     L581B               ; TO HEADS UP  <-----<<<<

E503:   LE503   JSR     LFBDB               ;

E506:           STAA    L002D               ; MAP, (A/D, 0-255)

E508:           LDAB    L0014               ; CURRENT ERROR flag 3
E50A:           BITB    #$10                ; b4, EPROM ERROR
E50C:           BEQ     LE516               ; BR IF NOT b4
                                            ; ... else
E50E:           LDAA    L0070               ;
E510:           ASRA                        ;
E511:           BCS     LE531               ;
                                            ; ... else
E513:           JMP     LEA7B               ;


E516:   LE516   LDAA    L0070               ;
E518:           ASRA                        ;
E519:           BCS     LE520               ;
                                            ; ... else
E51B:           JSR     LE049               ;

E51E:           BRA     LE57F
```

```
                                        ;
E520:   LE520   LDAA    L0881           ;

E523:           LDAB    L0002           ; FLAG WD
E525:           BITB    #$08            ; b3, DIAF SW LT 2 VDC
E527:           BNE     LE52B           ; BR IF NOT b3
                                        ; ... else
E529:           EORA    #$08            ; TOGGLE b3
E52B:   LE52B   STAA    L0881           ;

E52E:           JMP     LD617           ;
        ;-----------------------------------------------


        ;-----------------------------------------------
        ; REAL TIME SERVICE ALGO
        ;
        ;-----------------------------------------------
E531:   LE531   LDAA    L0070           ;
E533:           ASRA                    ;
E534:           BCC     LE53B           ;
                                        ; ... else
E536:           LDAA    #$00FB          ;
E538:           JSR     LFBF6           ;
                                        ;
E53B:   LE53B   LDAB    L0070           ; LOOP COUNTER
E53D:           ANDB    #$0F            ; MASK FOR LOW NIBBLE

E53F:           LDX     #$E55E          ; INDEX RT ROUTINE ADDR TABLE
E542:           ASLB                    ;
E543:           ABX                     ;
E544:           LDX     0,X             ; GET ADDRESS FROM ADDR TABLE
E546:           JSR     0,X             ; Call Routine

E548:   LE548   LDAA    L0001           ;
E54A:           BITA    #$04            ;
E54C:           BNE     LE55B           ;
                                        ; ... else
E54E:           ORAA    #$04            ; SET b2
E550:           STAA    L0001           ;

E552:           LDAB    L0070           ;
E554:           STAB    L00DD           ;

E556:           CLI                     ;

E557:           ANDA    #$FB            ; CLEAR b2
E559:           STAA    L0001           ;

E55B:   LE55B   CLI                     ;
E55C:           BRA     LE55B           ;
        ;-----------------------------------------------


        ;-----------------------------------------------
        ; REAL TIME SERVICE ROUTINES
        ;
        ;-----------------------------------------------
        LE55E   FDB LEA9C   ; 0
                FDB LEB30   ; 1
                FDB LEB36   ; 2     CHECK DIAG MODE SWITCH
                FDB LEB59   ; 3
                FDB LECF8   ; 4
                FDB LEF07   ; 5
                FDB LFDEA   ; 6     CHECK HEADS UP
```

```
                FDB LF223   ; 7
                FDB LF497   ; 8
                FDB LFDF4   ; 9
                FDB LFE09   ; A
                FDB LF025   ; B
                FDB LFE13   ; C
                FDB LF4DE   ; D
                FDB LFE0E   ; E
                FDB LED13   ; F

        LE57E   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
E57F:   LE57F   JSR     LFA59               ;

E582:           LDAB    #151                ;

E584:           LDAA    L00FE               ; BARO PRESSURE
E586:           SUBA    L002C               ; MAP, Kpa
E588:           BHI     LE58D               ; BR IF BARO GT MAP
                                            ; ... else
E58A:           LDAA    #1                  ; PREVENT MAP ROLL OVER
E58C:           CLC                         ; CLR CY
E58D:   LE58D   JSR     LFC1C               ;

E590:           NEGA                        ; INVERT
E591:           STAA    L0031               ; VACUUM

E593:           LDAB    #151                ;
E595:           LDAA    L002C               ; BYTE FILT MAP
E597:           SUBA    #26                 ; 19.9 Kpa
E599:           JSR     LFC1C               ;

E59C:           STAA    L0026               ; S/D MAP

E59E:           LDAB    L0009               ;
E5A0:           ANDB    #$F7                ; CLEAR b3
E5A2:           BITB    #$04                ; b2
E5A4:           BNE     LE5C7               ; BE ID b2
                                            ; ... else
        ;
        ; CHECK ERR 34 PARAMS
        ;
E5A6:           LDAA    L002D               ; MAP VALUE
E5A8:           CMPA    LD53B               ; MAP limit, (14.0 Kpa)
E5AB:           BCC     LE5C7               ; BR IF MAP GT 14.4
                                            ; ... else
E5AD:           LDAA    L008E               ; ERR TIMER, (12.5 msec INCR'S)
E5AF:           CMPA    LD53D               ; 20 msec, TIME LIMIT (sec * 80), ERR 34
                                            ; BR IF ERR TIMER GT 20 msec
E5B2:           BHI     LE5CC               ; ... else
E5B4:           LDAA    L001A               ; RPM/25
E5B6:           CMPA    LD53C               ; 1200 RPM, (TBL), ERR 34
E5B9:           BCS     LE5C2               ;
                                            ; ... else
E5BB:           LDAA    L0049               ; CURRENT TPS VALUE
E5BD:           CMPA    LD53E               ; 1.08 VDC TPS LMT, ERR 34
E5C0:           BLS     LE5C7               ;
                                            ; ... else
E5C2:   LE5C2   INC     L008E               ; ERR TIMER
E5C5:           BRA     LE5D4               ;
                                            ;
E5C7:   LE5C7   CLR     L008E               ; CLEAR ERR TIMER
```

```
E5CA:           BRA     LE5D4               ;
       ;-----------------------------------------------

E5CC:   LE5CC   LDAA    L0013               ;
E5CE:           ORAA    #$08                ;
E5D0:           STAA    L0013               ;

E5D2:           ORAB    #$08                ;
E5D4:   LE5D4   STAB    L0009               ;

E5D6:           LDAA    L0002               ; FLAG WD
E5D8:           BITA    #$04                ; b2, DISG SW GT 3V
E5DA:           BEQ     LE646               ; BR IF NOT b2
                                            ; ... else
E5DC:           LDD     L0062               ;
E5DE:           LSRD                        ;
E5DF:           LSRD                        ;
E5E0:           LSRD                        ;
E5E1:           COMA                        ;
E5E2:           COMB                        ;
E5E3:           ADDD    L0062               ;
E5E5:           BPL     LE5E9               ;
                                            ; ... else
E5E7:           CLRA                        ;
E5E8:           CLRB                        ;
E5E9:   LE5E9   STD     L0062               ;

E5EB:           CLR     L0072               ;

E5EE:           LDAA    L0001               ;
E5F0:           BPL     LE607               ;
                                            ; ... else
E5F2:           BITA    #$40                ;
E5F4:           BEQ     LE662               ;
                                            ; ... else
E5F6:           LDX     L0068               ;
E5F8:           CPX     #$FEF0              ;
E5FB:           BHI     LE662               ;
                                            ; ... else
E5FD:           LDAB    LD01D               ; START UP SA COEF,  Filts SA from 0 at start
E600:           LDAA    #255                ;
E602:           JSR     LFB12               ; LAG FILTER

E605:           BRA     LE642


                                            ;
E607:   LE607   LDAB    L0000               ;
E609:           BITB    #$08                ;
E60B:           BEQ     LE655               ;
                                            ; ... else
E60D:           LDD     LD00A               ; ENG START UP RPM DRP PERIODS, (499 RPM)
E610:           SUBD    LBC00               ; ECU HARDWARE
E613:           BLS     LE61F               ;
                                            ; ... else
E615:           LDAA    L005B               ; DRP CNT'R
E617:           CMPA    LD017               ; 4, ENG RUN TIME OUT PARAM, DRP'S
E61A:           BCC     LE624               ;
                                            ; ... else
E61C:           INCA                        ; INCR DRP CNT'R, (ENG RUN TIME OUT)
E61D:           BRA     LE620               ;
                                            ;
E61F:   LE61F   CLRA                        ; CLR DRP CNT'R
E620:   LE620   STAA    L005B               ; DRP CNT'R (ENG RUN TIME OUT

E622:           BRA     LE659               ;
```

```
                                        ;
E624:   LE624   LDAA    L0001           ;
E626:           ORAA    #$80            ; b7
E628:           STAA    L0001           ;

E62A:           CLR     L005B           ; CLEAR COUNTER

E62D:           LDAA    LD2C6           ; 65% TPS VALUE, CLR FLOOD
E630:           CMPA    L0049           ; CURRENT TPS VALUE
E632:           BHI     LE63A           ; BR IF TPS GT THRESH
                                        ; ... else
E634:           LDAA    L000E           ; A/F MODE Word Flag
E636:           ORAA    #$01            ; SET b0, CLR FLOOD
E638:           STAA    L000E           ; A/F MODE Word Flag

E63A:   LE63A   LDAA    L00DE           ;
E63C:           ORAA    #$08            ; SET b3, CLEAR FLOOD
E63E:           STAA    L00DE           ;

E640:           CLRA                    ;
E641:           CLRB                    ;
E642:   LE642   STD     L0068           ;

E644:           BRA     LE662           ;

                                        ;
E646:   LE646   LDAA    L0072           ;

E648:           LDAB    L0001           ;
E64A:           CMPA    #23             ;
E64C:           BCS     LE65C           ;
                                        ; ... else
E64E:           ANDB    #$7F            ; CLR b8
E650:           STAB    L0001           ;
E652:           JMP     LEA8E           ;


E655:   LE655   ORAB    #$08            ; SET b3
E657:           STAB    L0000           ;

E659:   LE659   JMP     LEA7B           ;
 ;                                      ;
E65C:   LE65C   TSTB                    ;
E65D:           BPL     LE659           ;
                                        ; ... else
E65F:           INCA                    ;
E660:           STAA    L0072           ;
E662:   LE662   LDAA    #$0004          ;
E664:           JSR     LFC01           ;
E667:           JSR     LFD39           ; SHORT TIME DELAY

E66A:           LDD     LBC00           ; ECU HARDWARE
E66D:           STD     L0018           ;

E66F:           LDX     #$0018          ;

E672:           LDAA    LD016           ; NUM CYL'S,  (MAY BE 3,4,6 or 8)

E675:           LDAB    #32             ;
E677:           MUL                     ; 32 * NUM CYL'S
E678:           TBA                     ;
E679:           BEQ     LE680           ; BR IF
                                        ; ... else
E67B:           JSR     LFBB9           ;

E67E:           STD     L0018
```

```
        ;------------------------------------------------


        ;------------------------------------------------
E680:   LE680   LDD     L0018           ;
E682:           ASLD                    ;
E683:           STD     L0053           ;

E685:           LDD     #$0133          ;
E688:           JSR     LFB92           ;

E68B:           STD     L0051           ;

E68D:           CMPA    #$60            ;
E68F:           BLS     LE6AF           ;
                                        ; ... else
E691:           TSTB                    ;
E692:           BPL     LE697           ;
                                        ; ... else
E694:           INCA                    ;
E695:           BEQ     LE6A3           ;
                                        ; ... else
E697:   LE697   CMPA    #$0090          ;
E699:           BHI     LE69F           ;
                                        ; ... else
E69B:           ADDA    #$0040          ;
E69D:           BRA     LE6B8           ;


E69F:   LE69F   CMPA    #$BF            ;
E6A1:           BLS     LE6A7           ;
E6A3:   LE6A3   LDAA    #$00FF          ;

E6A5:           BRA     LE6A9           ;

                                        ;
E6A7:   LE6A7   ADDA    #64             ;
E6A9:   LE6A9   STAA    L001A           ; RPM/25

E6AB:           LDAA    #$00D0          ;

E6AD:           BRA     LE6BA           ;


                                        ;
E6AF:   LE6AF   ASLD                    ;
E6B0:           ADDD    #128            ;
E6B3:           SUBA    #32             ;
E6B5:           BCC     LE6B8           ; BR IF NO UNDERFLOW
                                        ; ... else
E6B7:           CLRA                    ;
E6B8:   LE6B8   STAA    L001A           ; RPM/25
E6BA:   LE6BA   STAA    L001B           ;

E6BC:           LDD     L0051           ;
E6BE:           ADDD    #128            ;
E6C1:           BCC     LE6C5
                                        ; ... else
E6C3:           LDAA    #255            ; BR IF NO OVERFLOW
E6C5:   LE6C5   STAA    L001C           ; RPM/25


E6C7:           LDD     L0051           ;
E6C9:           ASLD                    ;
E6CA:           BCS     LE6D1           ;
                                        ; ... else
E6CC:           ADDD    #128            ;
```

```
E6CF:           BCC     LE6D3           ; BR IF NO OVERFLOW
                                        ; ... else
E6D1:   LE6D1   LDAA    #255            ; FORCE MAX VALUE


        ;
        ; FILTER ..
        ;
E6D3:   LE6D3   LDX     L001D           ; OLD VALUE
E6D5:           BNE     LE6DA           ; BR IF NZ
                                        ; ... else
E6D7:           CLRB                    ;

E6D8:           BRA     LE6E0           ; JUMP AROUND FILTER ROUTINE

                                        ;
E6DA:   LE6DA   LDAB    LD01E           ; RPM FILTER CONSTANT
E6DD:           JSR     LFB12           ; LAG FILTER

E6E0:   LE6E0   STD     L001D           ;

E6E2:           ASLB                    ;
E6E3:           ADCA    #$00            ;
E6E5:           STAA    L001F           ; RPM/12.5
                                        ;
E6E7:           LDX     LBC00           ; ECU HARDWARE
E6EA:           STX     L0051           ;

E6EC:           LDAA    #$00FF          ;

E6EE:           LDAB    L0026           ; S/D MAP
E6F0:           SUBB    L0028           ;
E6F2:           BCS     LE6F8           ;
                                        ; ... else
E6F4:           CMPB    #32             ;
E6F6:           BCC     LE703           ;
                                        ; ... else
E6F8:   LE6F8   LDD     L0060           ;
E6FA:           SUBD    L0051           ;
E6FC:           ASLD                    ;
E6FD:           SUBD    L0062           ;
E6FF:           BMI     LE705           ;
E701:           ADDD    L0062           ;
E703:   LE703   STD     L0062           ;
E705:   LE705   LDD     L0051           ;
E707:           LSRD                    ;
E708:           LSRD                    ;
E709:           LSRD                    ;
E70A:           SUBD    L0062           ;
E70C:           BCC     LE712           ;
E70E:           ADDD    L0062           ;
E710:           STD     L0062           ;
E712:   LE712   LDD     L0051           ;
E714:           STD     L0060           ;
E716:           LSRD                    ;
E717:           SUBD    #$00E5          ;
E71A:           BCC     LE721           ;
E71C:           ADDD    #$0134          ;
E71F:           BRA     LE731           ;
 ;                                      ;
E721:   LE721   LSRD                    ;
E722:           SUBD    #$0127          ;
E725:           BCS     LE72C           ;
E727:           ADDD    #$017E          ;
E72A:           BRA     LE731           ;
 ;                                      ;
```

```
E72C:   LE72C   ADDD    #$05F7              ;
E72F:           LSRD                      ;
E730:           LSRD                      ;
E731:   LE731   STD     L0051             ;

E733:           LDAA    #120              ; 12 VDC
E735:           SUBA    L0045             ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
E737:           BCC     LE73A             ;
                                          ; ... else
E739:           CLRA                      ;
E73A:   LE73A   LDAB    #$0004            ;
E73C:           MUL                       ;
E73D:           ADDD    L0051             ;
E73F:           ADDD    L0062             ;
E741:           STD     L0064             ;

E743:           LDD     LBC00             ; ECU HARDWARE
E746:           SUBD    #39               ;
E749:           SUBD    L0064             ;
E74B:           BCC     LE751             ;
                                          ; ... else
E74D:           ADDD    L0064             ;
E74F:           STD     L0064             ;

E751:   LE751   LDAB    L0027             ;
E753:           STAB    L0028             ;

E755:           LDAB    L0026             ; S/D MAP
E757:           STAB    L0027             ;

        *=========================================
        * MAIN SA TABLE, (14x15)
        *
        * ECM 1227747 SA table ASDZ
        *=========================================
E759:           LDX     #$D032            ; MAIN SA TABLE
                                          ;
E75C:           LDAB    L0026             ; S/D MAP
E75E:           LDAA    L001B             ;
                                          ;
E760:           JSR     LFB67             ; 3d LK UP
                                          ;
E763:           LDAB    L001C             ; RPM/25
E765:           CMPB    #144              ; 3600 RPM
E767:           BLS     LE77E             ; BR IF RPM LT 3600 RPM
                                          ; ... else
E769:           CMPB    LD00C             ; 4200 RPM,  MAIN SPK HI EXTEND B.P. RPM/25
E76C:           BLS     LE771             ;
                                          ; ... else
E76E:           LDAB    LD00C             ; 4200 RPM,  MAIN SPK HI EXTEND B.P. RPM/25
E771:   LE771   SUBB    #144              ; 3600 RPM
E773:           ASLB                      ;
E774:           LDAA    LD00D             ; DEG/1K RPM SLOPE (5 DEG/1K RPM) USED TILL RP
E777:           MUL                       ;
E778:           ADDA    L0051             ;
E77A:           BCC     LE77E             ;
                                          ; ... else
E77C:           LDAA    #255              ; FORCE MAX LIMIT
E77E:   LE77E   TAB                       ;
E77F:           CLRA                      ;
E780:           STD     L0057             ;

        ;-----------------------------------------
        ;  COOLANT COMP SPARK Vs. LOAD Vs. Deg c COOL
        ;
        ;    (12x5)
```

```
        ;   Val's show in ENG units include 20 deg bias
        ;   Added SA = tab-57/(256/90)
        ;
        ; Dissassemby of ASDZ 07-19-1998 14:21:16
        ;
        ;
        ; TBL = (256/90) x SPK +  20
        ;-------------------------------------------
E782:           LDAA    L0021               ; COOLANT 5 - 115c
E784:           CMPA    #160                ; 115 deg c
E786:           BLS     LE78D               ; BR IF COOL LT 115c
                                            ; ... else
E788:           LSRA                        ;
E789:           ADCA    #$00                ;
E78B:           ADDA    #80                 ;

E78D:   LE78D   LDX     #$D107              ; COOLANT COMP SPARK Vs. LOAD Vs. COOL
                                            ;
E790:           LDAB    L0031               ; VACUUME  40 - 0 Kpa
E792:           LSRB                        ; VAC/2
E793:           JSR     LFB67               ; 3d LK UP

E796:           PSHA                        ;
E797:           CLRA                        ;

E798:           LDAB    LD1BA               ; 0.9960 SPK COEF FOR EGR OFF SPK FILTER

E79B:           TST     L0006               ; STATUS
E79E:           BPL     LE7AB               ;
                                            ; ... else
        *******************************************
        *  EGR SPK ADV vs EGR CORR FACTOR
        *
        * IF EGR ON THESE VAL'S SUB'ED FM SPK ADV
        *
        * VAL = SPK ADV * (256/90)
        *******************************************
E7A0:           LDAA    L007F               ;
E7A2:           LDX     #$D146              ; EGR SPK ADV vs EGR CORR FACTOR (17 LINES)

E7A5:           JSR     LFB49               ; 2d LOOK UP ROUTINE

E7A8:           LDAB    LD1BB               ; 0.0625 SPK COEF FOR EGR  ON SPK FILTER
E7AB:   LE7AB   LDX     L006A               ; OLD FILT SPARK VALUE
E7AD:           JSR     LFB12               ; LAG FILTER

E7B0:           STD     L006A               ; FILTERED SPK ADV

E7B2:           ASLB                        ;
E7B3:           ADCA    #$00                ;
E7B5:           PSHA                        ;
E7B6:           LDAB    L000A               ;
E7B8:           BPL     LE7D7               ;
                                            ; ... else
E7BA:           BITB    #$60                ;
E7BC:           BNE     LE7D7               ;
                                            ; ... else
E7BE:           LDAB    L000D               ;
E7C0:           BITB    #$20                ; b5
E7C2:           BNE     LE7C9               ; BR IF b5
                                            ; ... else
E7C4:           JSR     LFDCB               ;

E7C7:           BRA     LE7D7               ;
```

```
        ******************************************
        * PWR ENRICH SA CORRECTION Vs. RPM TBL
        *
        * INCR SA IF PWR ENRICH IS ON
        *
        * VAL = SPK ADV * (256/90)
        ******************************************
E7C9:   LE7C9   LDX     #$D15D              ; PWR ENRICH SA CORRECTION TBL
E7CC:           LDAA    L001C               ; RPM/25
E7CE:           LDAB    #32                 ; 800 RPM ARGUMENT MINIMUM VALUE
                                            ;
E7D0:           JSR     LFB37               ; 2d LK UP, WITH LOWER ARG LIMIT

E7D3:           SUBA    L006E               ; PWR ENR SPK
E7D5:           BHI     LE7D8               ; BR IF  PWR ENR SPK GT OLD VAL
                                            ; ... else
E7D7:   LE7D7   CLRA                        ;
E7D8:   LE7D8   PSHA                        ;
E7D9:           CLRB                        ;

E7DA:           LDAA    L0002               ; STATUS FLAG WD
E7DC:           BITA    #$20                ; b5, CLOSED LOOP
E7DE:           BEQ     LE7E3               ; BR IF NOT b5
                                            ; ... else
E7E0:           LDAB    LD023               ; SA Diff for ALDL (8 Deg ?
E7E3:   LE7E3   LDX     L0057               ;
E7E5:           ABX                         ; ADD IN ALDL SPARK

E7E6:           PULB                        ;
E7E7:           ABX                         ; ADD IN SPARK ADVANCE
                                            ;
E7E8:           PULB                        ;
E7E9:           ABX                         ; ADD IN SPARK ADVANCE
                                            ;
E7EA:           PULB                        ;
E7EB:           ABX                         ; ADD IN SPARK ADVANCE
                                            ;
E7EC:           LDAB    L00E7               ; TIME OUT SPARK ADV.
E7EE:           ABX                         ; ADD IN SPARK ADVANCE
E7EF:           STX     L0057               ;
                                            ;
E7F1:           CLRB                        ;
                                            ;
E7F2:           LDAA    L0036               ;
E7F4:           CMPA    LD024               ; 3 MPH, HWAY Spk Adv QUAL Thresh MPH, MIN
E7F7:           BLS     LE80B               ; BR IF Vss LT THRESH
                                            ; ... else
E7F9:           LDAA    L000A               ;
E7FB:           BPL     LE80B               ; BR IF NOT b7
                                            ; ... else
E7FD:           LDAB    L0078               ; HWAY Spk Adv TIMER
E7FF:           CMPB    LD025               ; 40 Sec's HWAY Spk Adv QUAL MIN TIME Thresh (
E802:           BCC     LE810               ; BR IF TIMER GT THESH
                                            ; ... else
E804:           LDAA    L0070               ;
E806:           CMPA    #$08                ; b3
E808:           BNE     LE80B               ; BR IF b3
                                            ; ... else
E80A:           INCB                        ; INCR HWAY Spk Adv TIMER
E80B:   LE80B   STAB    L0078               ; HWAY Spk Adv TIMER
E80D:           CLRA                        ; CLR TIMER

E80E:           BRA     LE81B               ; GO SUB OFF SPARK BIAS

        ;-------------------------------------------
        ; HIWAY SPK ADV vs VACUUM
```

```
        ;
        ; ADDED SPK IF IN HIWAY MODE
        ; (See LD024 & LD025 FOR QUAL'S)
        ;
        ; VAL = SPK ADV * (256/90)
        ;-----------------------------------------
E810:   LE810   LDAA    L0031           ; VACUUM
E812:           LSRA                    ; VAC/2 FOR LK UP SCALEING
                                        ;
E813:           LDAB    #48             ; LK UP ARG LIMITER, (50 Kpa VAC)
                                        ;
E815:           LDX     #$D157          ;  HIWAY SPK ADV vs VACUUM, (6 LINES)
                                        ;
E818:           JSR     LFB45           ; 2d LOOK UP ROUTINE
        ;
        ; SUB OFF SPARK BIAS
        ;
E81B:   LE81B   TAB                     ; A to B Reg.
E81C:           CLRA                    ;
E81D:           ADDD    L0057           ;
E81F:           SUBB    LD014           ; Main SA BIAS, (10 Deg)
E822:           SBCA    #$00            ; ROUND
E824:           SUBB    LD015           ; COOL SA BIAS, (20 Deg)
E827:           SBCA    #$00            ; ROUND
E829:           STD     L0051           ; SAVE ADJUSTED SPARK ADVANCE (Temp)

            ;-------------------------------
            ; CHECK HEADS UP FOR SPK MODIFER
            ;
            ;-------------------------------
E82B:           LDAA    L0000           ; STATUS MODE WD
E82D:           BITA    #$02            ; b1
E82F:           BEQ     LE834           ; BR IF NOT b1
                                        ; ... else
E831:           JSR     L580C           ; GOTO HEADS UP, (spark)   <-----<<<<
                                        ;
E834:   LE834   LDD     L0051           ; ADJUSTED SPARK ADVANCE (Temp)
E836:           SUBB    LD009           ; SA INIT, (256/90)
E839:           SBCA    #$00            ; ROUND
E83B:           STD     L0066           ; TOTAL SPARK ADV

E83D:           LDD     LD019           ; MAX SA, 41 DEG
E840:           SUBD    L0066           ; TOTAL SPARK ADV               ;
E842:           BGT     LE848           ;
                                        ; ... else
E844:           ADDD    L0066           ;
E846:           STD     L0066           ;

E848:   LE848   LDAA    LD006           ; Opt Word 2, 1101 0000
E84B:           BITA    #$01            ;
E84D:           BEQ     LE8A4           ;
                                        ; ... else
E84F:           LDAA    L0002           ; FLAG WD
E851:           BITA    #$30            ; b5 & b4. b5 = CLSD LP, b4 =?
E853:           BNE     LE8A4           ;
                                        ; ... else
E855:           LDAA    L00E3           ; COOL, 1k pu
E857:           CMPA    LD02D           ; 48c KNOCK COOL Cut off, TBL 3
E85A:           BHI     LE8A4           ;
                                        ; ... else
E85C:           LDAB    L0006           ; STATUS
E85E:           BITB    #$02            ; b2
E860:           BEQ     LE87F           ; BR IF NOT b2
                                        ; ... else
E862:           DEC     L0079           ;
E865:           BNE     LE86B           ;
```

```
                                        ; ... else
E867:           ANDB    #$FD            ; CLR b1
E869:           STAB    L0006           ; STATUS

        ;-----------------------------------------
        ; DEG BURST KNOCK RETARD vs COOL
        ;
        ;  VAL = SPK ADV * (256/90)
        ;-----------------------------------------
E86B:   LE86B   LDAA    L0021           ; COOLANT 75 - 110c
E86D:           LDAB    #128            ; COOL ARG, LOWER LIMIT
                                        ;
E86F:           LDX     #$D166          ; DEG BURST KNOCK RETARD
                                        ;
E872:           JSR     LFB37           ; 2d LK UP, WITH LOWER ARG LIMIT
                                        ;
E875:           LDD     L0066           ; TOTAL SPARK ADV
E877:           SUBB    L0051           ;
E879:           SBCA    #$00            ;
E87B:           STD     L0066           ; TOTAL SPARK ADV
                                        ;
E87D:           BRA     LE8A1           ;
                                        ;
        ;------------------------
        ; BURST KNOCK RETARD QUALS
        ;------------------------
E87F:   LE87F   LDAA    L0026           ; S/D MAP
E881:           CMPA    LD02E           ; MAP Threshold, 40 Kpa
E884:           BCC     LE8A4           ;
                                        ; ... else
E886:           LDAB    L0049           ; CURRENT TPS VALUE
E888:           CMPB    LD02F           ; TPS Threshold, 19.9% TPS
E88B:           BCC     LE8A4           ;
                                        ; ... else
E88D:           SUBB    L004A           ;
E88F:           BCS     LE8A4           ;
                                        ; .. else
E891:           CMPB    LD030           ; Diff TPS, 2%
E894:           BCS     LE8A4           ;
                                        ; ... else
E896:           LDAB    L0006           ; STATUS
E898:           ORAB    #$02            ; SET b1
E89A:           STAB    L0006           ;

E89C:           LDAA    LD031           ; 0 Sec's, Duration of RETARD, Sec * 80
E89F:           STAA    L0079           ;

E8A1:   LE8A1   CLR     L008F           ; ERR 43 TEST TIMER

E8A4:   LE8A4   LDD     LBC0A           ; ECU HARDWARE
E8A7:           STD     L0052           ;

E8A9:           SUBD    L0073           ; OLD PA3
E8AB:           TSTA                    ;
E8AC:           BEQ     LE8B0           ;
                                        ;
E8AE:           LDAB    #255            ; FORCE MAX VALUE
                                        ;
E8B0:   LE8B0   LDX     L00EB           ; Eng run time
E8B2:           CPX     LD54A           ; 0 SEC Eng run time prior to test
E8B5:           BLS     LE8C2           ; BR IT ENG RUN TIME LT THRESH
                                        ; ... else
E8B7:           CMPB    LD555           ; 2, KNOCK ACCUM LIMIT
E8BA:           BLS     LE8C5           ; BR IF KNOCK COUNT ....
                                        ; ... else
E8BC:           LDAA    L000A           ;
```

```
E8BE:           ORAA    #$80                ; SET b7
E8C0:           STAA    L000A               ;

E8C2:   LE8C2   CLR     L008F               ; ERR 43 TEST TIMER

E8C5:   LE8C5   LDX     L0052               ;
E8C7:           STX     L0073               ; OLD PA3

E8C9:           LDAA    L0006               ; STATUS
E8CB:           BITA    #$02                ; b1
E8CD:           BNE     LE8D6               ; BR IF b1
                                            ; ... else
E8CF:           LDAA    L00E3               ; COOL, 1k pu
E8D1:           CMPA    LD02D               ; 48c KNOCK COOL Cut off, TBL 3
E8D4:           BCS     LE8D9               ;
                                            ; ... else
E8D6:   LE8D6   CLRA                        ;
E8D7:           BRA     LE931               ;


E8D9:   LE8D9   LDAA    L0034               ; FILT Vss/1
E8DB:           CMPA    LD02B               ; 2 MPH, Cut off for RETARD Increas
E8DE:           BCC     LE8E7               ; BR IF Vss GT THRESH

E8E0:           LDAA    L001D               ;
E8E2:           CMPA    LD02C               ; 700 RPM, Cut off for RETARD Increase
E8E5:           BCS     LE93E               ;
                                            ; ... else
E8E7:   LE8E7   LDAA    L0045               ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
E8E9:           CMPA    #90                 ; 9.0 VDC
E8EB:           BCS     LE8F3               ;
                                            ; ... else
E8ED:           LDAA    L000A               ;
E8EF:           BITA    #$60                ;
E8F1:           BEQ     LE8F8               ;
                                            ; ... else
E8F3:   LE8F3   LDAA    LD54D               ; 2.3 SEC'S, EST fail test period

E8F6:           BRA     LE931               ;



        ;---------------------------------------------
        ; RETARD ATTACK RATE vs RPM
        ;
        ; TYPE $42 ECM, ASDZ
        ;
        ;
        ; DEG/MSEC
        ; TBL = (DEG/MS)/.0255
        ;---------------------------------------------
E8F8:   LE8F8   PSHB                        ;

E8F9:           LDX     #$D18D              ;

E8FC:           JSR     LFDDA               ; SET RPM SACLE AND 2d LOOK UP

E8FF:           PULB                        ;
E900:           MUL                         ;
E901:           ASLD                        ;
E902:           BCS     LE908               ;
                                            ; ... else
E904:           ADDA    L0077               ;
E906:           BCC     LE90A               ; BR IF NO OVERFLOW
                                            ; ... else
E908:   LE908   LDAA    #255                ; FORCE MAX VALUE
```

```
E90A:   LE90A   PSHA                    ;

E90B:           LDAB    L000D           ;
E90D:           BITB    #$20            ;
E90F:           BEQ     LE919           ;
                                        ; ... else
        ******************************************
        * MAX KNK RETARD LIMITS IN PWR ENR vs RPM
        * ASDZ, TYPE $42,  9 lines
        *
        *
        *  TBL = SPK RETARD * (256/45)
        ******************************************
E911:           LDX     #$D17F          ; MAX KNK RETARD LIMITS IN PWR ENR vs RPM

E914:           JSR     LFDDA           ; SET RPM SACLE AND 2d LOOK UP

E917:           BRA     LE92C           ;

                                        ;
E919:   LE919   LDAA    #$00FF          ;

E91B:           LDAB    L0009           ;
E91D:           BITB    #$48            ; b6 & b3
E91F:           BNE     LE923           ; BR IF b6 or b3
                                        ; ... else


        ******************************************
        * MAX KNK RETARD vs VACUUM
        * ASDZ, 5 LINES
        *
        *  TBL = SPK RETARD * (256/45)
        ******************************************
E921:           LDAA    L0031           ; VACUUM
E923:   LE923   LSRA                    ; VAC/2 SCALEING FOR LK UP
                                        ;
E924:           LDAB    #64             ; LK UP ARG LIMIT, (40 Kpa VAC)
                                        ;
E926:           LDX     #$D188          ; MAX KNK RETARD vs VACUUM,(5 LINES)

E929:           JSR     LFB45           ; 2d LK UP

E92C:   LE92C   PULB                    ;
E92D:           CBA                     ;
E92E:           BLS     LE931           ;
                                        ; ... else
E930:           TBA                     ;
E931:   LE931   STAA    L0077           ;
E933:           LSRA                    ;
E934:           STAA    L0051           ;

E936:           LDD     L0066           ; TOTAL SPARK ADV
E938:           SUBB    L0051           ;
E93A:           SBCA    #$00            ;
E93C:           STD     L0066           ; TOTAL SPARK ADV

E93E:   LE93E   LDD     LD01B           ; MAX RETARD (9.4 Deg)
E941:           SUBD    L0066           ; TOTAL SPARK ADV
E943:           BLT     LE949           ; BR IF SPK ADV MAX LMT
                                        ; ... else
E945:           ADDD    L0066           ; TOTAL SPARK ADV
E947:           STD     L0066           ; TOTAL SPARK ADV

E949:   LE949   LDAA    L008F           ; ERR 43 TEST TIMER
E94B:           BEQ     LE968
```

```
                                                ; ... else
E94D:           LDX     L0066                   ; TOTAL SPARK ADV

E94F:           LDAB    LD553                   ; 11.9 Deg SA TEST SPK 1st Pwr Enr MODE, ERR 4

E952:           LDAA    L000A
E954:           BITA    #$02                    ; b1
E956:           BEQ     LE95B                   ; BR IF NOT b1
                                                ; ... else
E958:           LDAB    LD554                   ; 22.2 Deg SA TEST SPK 2nd Pwr Enr MODE
E95B:   LE95B   ABX                             ; ADD TO TOTAL SPK ADV
E95C:           CPX     LD019                   ; MAX SA, 41 DEG
E95F:           BLS     LE966
                                                ; ... else
E961:           CLR     L008F                   ; ERR 43 TEST TIMER

E964:           LDX     L0066                   ; TOTAL SPARK ADV
E966:   LE966   STX     L0066                   ; TOTAL SPARK ADV

E968:   LE968   LDD     L0066                   ; TOTAL SPARK ADV
E96A:           BMI     LE974
                                                ; .... else
E96C:           LDAA    L0001
E96E:           ANDA    #$FE                    ; CLEAR b0
E970:           STAA    L0001

E972:           BRA     LE97B


E974:   LE974   LDAA    L0001
E976:           ORAA    #$01                    ; SET b0
E978:           STAA    L0001

E97A:           NEGB
E97B:   LE97B   LDAA    L0068
E97D:           TST     L0069
E980:           BPL     LE983
                                                ; .... else
E982:           INCA
E983:   LE983   MUL
E984:           INCA

        ;
        ; CHECK HEADS UP STATUS
        ;
E985:           LDAB    L0000                   ; STATUS MODE WD
E987:           BITB    #$02                    ; b1
E989:           BEQ     LE98E                   ; BR IF NOT b1
                                                ; ... else
E98B:           JSR     L5812                   ; TO HEADS UP <------------<<<

E98E:   LE98E   LDX     #$0018

E991:           JSR     LFBB9

E994:           STD     L0056                   ; PROABLY MAIN SPARK ??? TO CNT'RS


        ;-----------------------------------------------
        ; SPK LATENCIES CORRECTION vs RPM
        ; 0 - 4800 RPM
        ;
        ; TBL = usec/15.26
        ;-----------------------------------------------
E996:           LDAA    L001C                   ; RPM
```

```
E998:           LDX     #$D19F          ; SPK LATENCIES CORRECTION vs RPM, (13 LINES)

E99B:           JSR     LFB36           ; 2d LK UP, WITH UPPER LIMIT

E99E:           STAA    L0054           ; SAVE SPK LATE COMP

E9A0:           LDAB    L0001
E9A2:           BITB    #$01            ; b0
E9A4:           BNE     LE9AC           ; BR IF b0
                                        ; ... else
E9A6:           CLRA
E9A7:           CLRB
E9A8:           SUBD    L0056
E9AA:           BRA     LE9AE


E9AC:   LE9AC   LDD     L0056
E9AE:   LE9AE   SUBB    L0054
E9B0:           SBCA    #$00
E9B2:           STD     L0051

E9B4:           CLRA
E9B5:           CLRB
E9B6:           SUBD    LBC00           ; ECU HARDWARE
E9B9:           LSRD
E9BA:           LSRD
E9BB:           LSRD
E9BC:           LSRD
E9BD:           ORAA    #$F0            ; 1111 0000
E9BF:           ADDD    LBC20           ; ECU HARDWARE
E9C2:           SUBD    L0051
E9C4:           BMI     LE9CA
                                        ; ... else
E9C6:           ADDD    L0051
E9C8:           STD     L0051

E9CA:   LE9CA   LDD     L0051
E9CC:           SUBD    LBC20           ; ECU HARDWARE
E9CF:           JSR     LFD39           ; SHORT TIME DELAY

E9D2:           STD     LBC28           ; ECU HARDWARE

E9D5:           JSR     LFD39           ; SHORT TIME DELAY

E9D8:           ADDD    LBC1C           ; ECU HARDWARE
E9DB:           SUBD    L0064
E9DD:           NOP

E9DE:           LDX     L0064
E9E0:           STD     LBC26           ; ECU HARDWARE

E9E3:           JSR     LFD39           ; SHORT TIME DELAY

E9E6:           STX     LBC1C           ; ECU HARDWARE
E9E9:           JSR     LFD39           ; SHORT TIME DELAY

E9EC:           LDD     L0051
E9EE:           STD     LBC36           ; ECU HARDWARE

E9F1:           LDAA    L0000
E9F3:           BITA    #$08            ; b3
E9F5:           BEQ     LEA5D           ; BR IF NOT b3
                                        ; ... else
E9F7:           LDAB    L0002           ; FLAG WD
E9F9:           BITB    #$04            ; b2
E9FB:           BEQ     LEA43           ; BR IF NOT b2
```

```
                                            ; ... else
E9FD:           LDX     LBC06               ; ECU HARDWARE
EA00:           STX     L0051

EA02:           LDAB    LD50E               ; Mask for MALFFLG2,  0011 1001
EA05:           BITB    #$01                ; b0, code 42, EST Mon error
EA07:           BEQ     LEA45               ; BR IF NOT b0
                                            ; ... else
EA09:           LDAB    L0001
EA0B:           BITB    #$40                ; b6
EA0D:           BNE     LEA50               ; BR IF b6,
                                            ; ... else
EA0F:           LDAA    L0000
EA11:           BMI     LEA39
                                            ; ... else
EA13:           PSHA
EA14:           LDD     L0051
EA16:           SUBD    L0092
EA18:           TSTA
EA19:           PULA
EA1A:           BNE     LEA29               ; BR IF NZ
                                            ; ... else
EA1C:           CMPB    LD547               ; 0, Num PA1 cnt's for error
EA1F:           BHI     LEA29               ; BR IF COUNT  GT 0
                                            ; ... else
EA21:           BITA    #$40                ; b6
EA23:           BNE     LEA45               ; BR IF b6
                                            ; ... else
EA25:           ORAA    #$40                ; SET b6

EA27:           BRA     LEA35



EA29:   LEA29   LDAB    L0094               ; EST FAULT CNT'R
EA2B:           CMPB    LD548               ; 4, Num of EST faults for 42A
EA2E:           BHI     LEA39               ; BR IF FAULT COUNT  GT 4
                                            ; ... else
EA30:           INC     L0094               ; INCR EST FAULT CNT'R
EA33:           ANDA    #$BF

EA35:   LEA35   STX     L0092

EA37:           BRA     LEA41


EA39:   LEA39   ORAA    #$80            ; SET b7, ERR 42A?

EA3B:           LDAB    L0013
EA3D:           ORAB    #$01            ; SET b0
EA3F:           STAB    L0013

EA41:   LEA41   STAA    L0000

EA43:   LEA43   BRA     LEA93

;
EA45:   LEA45   LDAB    L0001
EA47:           ORAB    #$40                ; SET b6
EA49:           STAB    L0001

EA4B:           CLR     L0094               ; CLEAR EST FAULT CNT'R

EA4E:           STX     L0092

EA50:   LEA50   ANDA    #$F7
```

```
EA52:           STAA    L0000

EA54:           LDD     LBC2C               ; ECU HARDWARE
EA57:           JSR     LFD39               ; SHORT TIME DELAY

EA5A:           STD     LBC24               ; ECU HARDWARE


EA5D:   LEA5D   LDAA    L0013
EA5F:           ORAA    #$0001
EA61:           LDAB    L00DE
EA63:           BPL     LEA6E
                                            ; ... else
EA65:           STAA    L0013

EA67:           LDD     LBC3C               ; ECU HARDWARE
EA6A:           ANDB    #$EF
E
A6C:           BRA     LEA73


EA6E:   LEA6E   LDD     LBC3C               ; ECU HARDWARE
EA71:           ORAB    #$10
EA73:   LEA73   JSR     LFD39               ; SHORT TIME DELAY
EA76:           STD     LBC3C               ; ECU HARDWARE

EA79:           BRA     LEA93


EA7B:   LEA7B   LDAA    #$0004

EA7D:           JSR     LFC01

EA80:           LDX     #$FFFF
EA83:           STX     L0018

EA85:           LDAA    L00DE
EA87:           BITA    #$08
EA89:           BNE     LEA8E
                                            ; ... else
EA8B:           INX
EA8C:           STX     L00EB               ; ENG RUN TIMER
EA8E:   LEA8E   LDAA    #$00EF
EA90:           JSR     LFBF6

EA93:   LEA93   LDAA    L0002               ; FLAG WD
EA95:           ANDA    #$FB                ; CLEAR b2, DIAG SW GT 3 V
EA97:           STAA    L0002               ; FLAG WD

EA99:           JMP     LE531

        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 0
        ;
        ;-------------------------------------------------
EA9C:           LDAA    #$0002
EA9E:           JSR     LFEFE

EAA1:           PSHA
EAA2:           LDAB    L0000
EAA4:           CMPA    #$005A
EAA6:           BCC     LEADF
EAA8:           CMPA    #$0028
EAAA:           BCC     LEAF4
                                            ; ... else
EAAC:           LDAA    L0045               ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
```

```
EAAE:           CMPA    #40             ; 4.0 VDC
EAB0:           BCC     LEAF4           ; BR IF Vbatt GT 4 VDC
                                        ; ... else
EAB2:           CLRA
EAB3:           STAA    L00EB
EAB5:           STAA    L00EC
EAB7:           ORAA    #$04
EAB9:           STAA    L00DE

EABB:           LDAA    L0001
EABD:           ANDA    #$7F
EABF:           STAA    L0001           ;
                                        ;
EAC1:           LDAA    L00DF           ;
EAC3:           ANDB    #$DF            ;
EAC5:           BITB    #$10            ;
EAC7:           BNE     LEAD9           ;
                                        ; ... else
EAC9:           BITA    #$02            ;
EACB:           BEQ     LEAD7           ;
                                        ; ... else
EACD:           PSHA                    ;
EACE:           LDAA    L000F           ;
EAD0:           ANDA    #$FC            ;
EAD2:           STAA    L000F           ;

EAD4:           PULA                    ;
EAD5:           ORAB    #$20            ; SET b5
EAD7:   LEAD7   ORAB    #$10            ; SET B4
EAD9:   LEAD9   ANDA    #$FD            ; CLEAR b1
EADB:           STAA    L00DF

EADD:           BRA     LEAF2


EADF:   LEADF   BITB    #$10            ; b4
EAE1:           BEQ     LEAE8           ;
                                        ; ... else
EAE3:           LDX     LBC06           ; ECU HARDWARE
EAE6:           STX     L0092           ;

EAE8:   LEAE8   LDAA    L00DE
EAEA:           ANDA    #$FB
EAEC:           STAA    L00DE

EAEE:           ANDB    #$EF            ; 1110 1111
EAF0:           ANDB    #$DF            ; 1101 1111
EAF2:   LEAF2   STAB    L0000

EAF4:   LEAF4   PULA                    ;
EAF5:           STAA    L0045           ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
                                        ;
EAF7:           LDAA    #$00            ;
EAF9:           JSR     LFEFE           ;
                                        ;
EAFC:           LDAA    L0046           ; BATTERY VDC
                                        ;
EAFE:           STAB    L0046           ; BATTERY VDC
EB00:           SBA                     ;
EB01:           BHI     LEB04           ;
                                        ; ... else
EB03:           CLRA                    ;


EB04:   LEB04   STAA    L0047           ;
                                        ;
```

```
EB06:           LDAB    L0001           ;
EB08:           BPL     LEB1A           ;
                                        ; ... else
EB0A:           ORAB    #$08            ; SET b3
                                        ;
EB0C:           LDAA    L00DF           ;
EB0E:           ORAA    #$02            ; SET b1
EB10:           STAA    L00DF           ;
                                        ;
EB12:           BRA     LEB2D           ;
                                        ;
                                        ;
EB14:   LEB14   LDAA    L00DE           ;
EB16:           ANDA    #$FB            ; CLR b2
EB18:           STAA    L00DE           ;
                                        ;
EB1A:   LEB1A   CLRA                    ;
                                        ;
EB1B:           BITB    #$08            ; b3
EB1D:           BNE     LEB28           ; BR IF b3,
                                        ; ... else
EB1F:           LDAA    L005C           ; ENG OFF TIME
EB21:           BEQ     LEB2B           ; BR IF ENG OFF TIME
                                        ; ... else
EB23:           CMPA    LD018           ; 4 sec's, ENG OFF TIME, (1 sec loop)
EB26:           BHI     LEB14           ; BR IF ENG OFF TIME GT 1 SEC
                                        ; ... else
EB28:   LEB28   INCA                    ;
EB29:           STAA    L005C           ;
                                        ;
EB2B:   LEB2B   ANDB    #$F7            ; CLR b3
EB2D:   LEB2D   STAB    L0001           ;

EB2F:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 1
        ;
        ;-------------------------------------------------
EB30:           JSR     LFD3A           ;
EB33:           JMP     LFC2D           ;
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 2
        ;  CK DIAG MODE STATUS
        ;
        ;-------------------------------------------------
EB36:           LDAA    #$0C            ; SET UP A/D
EB38:           CLRB                    ;
EB39:           JSR     LFBCE           ; A/D ROUTINE, ret W/RESULT IN A
                                        ;---------------------------
EB3C:           LDAB    L0002           ; FLAG WD
EB3E:           ANDB    #$C7            ; CLR b3,b4 & b5
                                        ;
                                        ;   b7 1=
                                        ;   b6 1=
                                        ;   b5 1= CLOSED LOOP
                                        ;   b4 1= LT 800 mvdc
                                        ;
                                        ;   b3 1= LT @ VDC
                                        ;   b2 1= GT 3 VDC
                                        ;   b1 1=
```

```
                                        ;   b0 1=
                                        ; --------------------------
EB40:           CMPA    #40             ; 800 Mvdc
EB42:           BCS     LEB50           ; BR IF DIAG SW LT 800 mvdc
                                        ; ... else
EB44:           CMPA    #100            ; 2.0 VDC
EB46:           BCS     LEB54           ; BR IF DIAG SW LT 2 VDC
                                        ; ... else
EB48:           CMPA    #153            ; 3.06 VDC
EB4A:           BCC     LEB56           ; BR IF DIAG SW GT 3.06 VDC
                                        ; ... else
EB4C:           ORAB    #$20            ; SET b5

EB4E:           BRA     LEB56


        ;
        ;  BLINK OUT ??
        ;
EB50:   LEB50   ORAB    #$10            ; SET b4, DIAG SW LT 800 mvdc
EB52:           BRA     LEB56           ;
                                        ;
                                        ;
EB54:   LEB54   ORAB    #$08            ; SET b3,  DIAG SW LT 2 VDC
                                        ;
EB56:   LEB56   STAB    L0002           ; FLAG WD, DIAG SW GT 3.06 VDC

EB58:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 3
        ;
        ;-------------------------------------------------
EB59:           PULX
EB5A:           LDX     #$D1B3          ; EGR PARAM'S
                                        ;
EB5D:           LDAB    L0006           ; STATUS
                                        ;
EB5F:           LDAA    0,X             ; 48c COOL FOR EGR ENABLE (1K PU)  TBL 3
EB61:           CMPA    L00E3           ; COOL, 1k pu
EB63:           BLS     LEBA5           ; BR IF COOL VAL LT THRESH
                                        ; ... else
EB65:           LDAA    6,X             ; 38 Kpa MAP,  VACUUM  FOR EGR ENABLE
                                        ;
EB67:           BITB    #$10            ; b4
EB69:           BEQ     LEB6D           ; BR IF NOT b4
                                        ; ... else
EB6B:           LDAA    5,X             ; 35 Kpa MAP,  VACUUM  FOR EGR ENABLE
EB6D:   LEB6D   CMPA    L0031           ; VACUUM
EB6F:           BLS     LEB75           ; BR IF VAC VAL GT THRESH
                                        ; ... else
EB71:           ANDB    #$EF            ; CLEAR b4
EB73:           BRA     LEBA3           ;
                                        ;
EB75:   LEB75   ORAB    #$10            ; SET b4
                                        ;
EB77:           LDAA    L0009           ;
EB79:           BITA    #$24            ; b2 & b5
EB7B:           BNE     LEB8F           ;
                                        ; ... else
EB7D:           LDAA    4,X             ; 3%,  HI  TPS  FOR EGR ENABLE
EB7F:           BITB    #$20            ;
EB81:           BEQ     LEB85           ;
                                        ; ... else
```

```
EB83:           LDAA    3,X             ; 2%,  LOW TPS  FOR EGR ENABLE
EB85:   LEB85   CMPA    L0049           ; CURRENT TPS VALUE
EB87:           BCS     LEB8D           ;
                                        ; ... else
EB89:           ANDB    #$DF            ; CLEAR b5

EB8B:           BRA     LEBA3


EB8D:   LEB8D   ORAB    #$20            ; b5
                                        ;
EB8F:   LEB8F   LDAA    L00DE           ;
EB91:           BITA    #$40            ; b6
EB93:           BNE     LEBAB           ;
                                        ; ... else
EB95:           LDAA    2,X             ; 0 MPH HI VSS THRESH  FOR EGR ENABLE
EB97:           BITB    #$40            ; b6
EB99:           BEQ     LEB9D           ;
                                        ; ... else
EB9B:           LDAA    1,X             ; 0 MPH LO VSS THRESH  FOR EGR ENABLE
EB9D:   LEB9D   CMPA    L0034           ; FILT Vss/1
EB9F:           BLS     LEBA9           ;
                                        ; ... else
EBA1:           ANDB    #$BF            ; CLR b6
EBA3:   LEBA3   STAB    L0006           ; STATUS
                                        ;
EBA5:   LEBA5   CLRA                    ;
EBA6:           JMP     LEC00

        ******************************************
        * PCT EGR Vs. VAC LOAD  Vs. RPM
        *
        * 01-31-1996 Dissassemby of ASDZ  Blocks = 7
        *
        * RPM 1000, 1200, 1400, 1600, 1800, 2200, 3000
        *
        * TBL =  2.56  * %EGR
        ******************************************
EBA9:   LEBA9   ORAB    #$40            ; SET b6
EBAB:   LEBAB   STAB    L0006           ; STATUS
                                        ;
EBAD:           LDX     #$D1C0          ; PCT EGR Vs. VAC LOAD  Vs. RPM
                                        ;
EBB0:           JSR     LFA4D           ;
                                        ;
EBB3:           LSRA                    ; RESULT/2
EBB4:           TAB                     ;
                                        ;
EBB5:           LDAA    L001F           ; RPM/12.5
EBB7:           CMPA    #144            ; 1800 RPM
EBB9:           BLS     LEBCB           ; BR IF RPM LT 1800
                                        ; ... else
EBBB:           LSRA                    ; RPM/2
EBBC:           ADDA    #72             ;
EBBE:           CMPA    #160            ; 2000 RPM/12.5
EBC0:           BLS     LEBCB           ; BR IF LT 2000 RPM
                                        ; ... else
EBC2:           LSRA                    ; RPM/2
EBC3:           ADCA    #80
EBC5:           CMPA    #80             ; 1000 RPM
EBC7:           BLS     LEBCB           ; BR IF RPM LT 1000
                                        ; ...else
EBC9:           LDAA    #176            ; 4400 RPM
                                        ;
EBCB:   LEBCB   JSR     LFB67           ; 3d LK UP
EBCE:           STAA    L0058           ; SAVE  PCT EGR, (temp)
```

```
        ;-------------------------------------------
        ; EGR GAIN vs COOLANT
        ;
        ; VAL = N * 128
        ;-------------------------------------------
EBD0:           LDX     #$D1F5              ; EGR GAIN vs COOLANT

EBD3:           LDAA    L0021               ; COOLANT
EBD5:           LDAB    #40                 ; COOLANT ARG, LOWER LIMIT
EBD7:           JSR     LFB37               ; 2d LK UP, WITH LOWER ARG LIMIT
                                            ;
EBDA:           BSR     LEC22               ;
                                            ;
EBDC:           LDAA    LD1BF               ; 50% TPS HI TPS THRESH EGR AFTER 50% GAIN = 0
EBDF:           CMPA    L0049               ; CURRENT TPS VALUE
EBE1:           BCS     LEBA5               ; BR IF TPS GT THRESH
                                            ; ... else

        ;-------------------------------------------
        ; EGR GAIN GAIN FACTOR vs BARO & MAP 3d
        ;
        ; TBL = GAIN * 128
        ;-------------------------------------------
EBE3:           JSR     LFD18               ; GET PROCESSED BARO VALUE IN A REG
EBE6:           TAB                         ; BARO IN A & B Reg

EBE7:           LDX     #$D1FE              ; EGR GAIN GAIN FACTOR vs BARO & MAP 3d

EBEA:           LDAA    L0026               ; S/D MAP

EBEC:           LSRA

EBED:           JSR     LFB67               ; 3d LK UP

EBF0:           BSR     LEC22

EBF2:           LDAA    L0080               ; Pct EGR
EBF4:           CLRB

EBF5:           PSHB
EBF6:           PSHA

EBF7:           PULX

        ;
        ; FILTER EGR
        ;
EBF8:           LDAA    L0058               ; PCT EGR (temp)
EBFA:           LDAB    LD1BC               ; 0.898 EGR D.C. FILTER COEF
EBFD:           JSR     LFB12               ; LAG FILTER

EC00:   LEC00   STAA    L0080               ; Pct EGR

        ;
        ; CK IF HEADS UP ON LINE
        ; EGR MOD
        ;
EC02:           LDAB    L0000               ; STATUS MODE WD
EC04:           BITB    #$02                ; b1
EC06:           BEQ     LEC0B               ; BR IF NOT b1
                                            ; ... else
EC08:           JSR     L5806               ; GOTO HEADS UP <-------<<

EC0B:   LEC0B   LDAB    #160                ;
EC0D:           MUL                         ;
```

```
EC0E:           ADCA    #$00                ;

        ;
        ; VAC LIMITER
        ;
EC10:           LDAB    L0031               ; VACUUM
EC12:           CMPB    #192                ; VAC LIMIT aprox 20 Kpa
EC14:           BCC     LEC2D               ; BR IF VAL VAL ...
                                            ; ... else
EC16:           CMPB    #64                 ; VAC LIMIT aprox 70 Kpa
EC18:           BHI     LEC1C               ;
                                            ; ... else
EC1A:           LDAB    #64                 ; VAC LIMIT aprox 70 Kpa
                                            ;
EC1C:   LEC1C   NEGB                        ;
EC1D:           LSRB                        ;
EC1E:           ADDB    #96                 ; 60 kpa

EC20:           BRA     LEC2F
        ;-------------------------------------------------


        ;-------------------------------------------------
EC22:   LEC22   LDAB    L0058               ; (Temp)
EC24:           MUL
EC25:           ASLD
EC26:           BCC     LEC2A               ; BR IF NO OVERFLOW
                                            ; ... else
EC28:           LDAA    #255                ; FORCE MAX VALUE
EC2A:   LEC2A   STAA    L0058

EC2C:           RTS
        ;-------------------------------------------------

EC2D:   LEC2D   NEGB
EC2E:           ASLB

        ********************************************
        *
        * EGR CORRECTION Vs. VACUUM Vs. EGR D.C.
        *
        * ASDZ BP EGR
        *
        * TBL = Factor * 256
        ********************************************
EC2F:   LEC2F   LDX     #$D21D              ; EGR CORRECTION Vs. VACUUM Vs. EGR D.C.

EC32:           JSR     LFB67               ; 3d LK UP

EC35:           STAA    L007F


EC37:           LDAB    L0006               ; STATUS
EC39:           ANDB    #$7F                ; CLR b7

EC3B:           LDAA    L0080               ; Pct EGR
EC3D:           CMPA    LD1BD               ; 19.9% D.C. THRESH FOR EGR ON
EC40:           BLS     LEC51
                                            ;... else
EC42:           LDAA    L0031               ; VACUUM
EC44:           CMPA    LD1BE               ; 1 Kpa VAC THRESH FOR EGR ON, (100 Kpa)
EC47:           BHI     LEC51             ; BR IF VAC GT THRESH
                                            ; ... else
EC49:           LDAA    L000A
EC4B:           BITA    #$01
EC4D:           BNE     LEC51
```

```
                                        ; ... else
EC4F:           ORAB    #$80            ; SET b7
EC51:   LEC51   STAB    L0006           ; STATUS

EC53:           JMP     LE548

        ;-----------------------------------------------
        ;
        ;
        ;-----------------------------------------------
EC56:   LEC56   LDAB    L00DF

EC58:           LDAA    L0045           ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
EC5A:           CMPA    #171            ; 17.1 VDC
EC5C:           BLS     LEC61           ; BR IF Vbatt LT THRESH
                                        ; ... else
EC5E:           JMP     LECDB           ; EXIT, HI Vbatt


EC61:   LEC61   LDAA    L0014           ; CURRENT ERROR flag 3
EC63:           BITA    #$10            ; b4, EPROM ERROR
EC65:           BNE     LEC7E           ; BR IF b4
                                        ; ... else
EC67:           LDAA    L0000           ;
EC69:           BITA    #$10            ; b4
EC6B:           BNE     LEC91           ;
                                        ; ... else
EC6D:           LDAA    L0001           ;
EC6F:           BPL     LEC86           ;
                                        ; ... else
EC71:           LDAA    L0045           ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
EC73:           CMPA    LD5D2           ; 8.7 VDC, STEPPER MOTER PROTECT
EC76:           BHI     LEC80           ;
                                        ; ... else
EC78:           LDAA    L000E           ; A/F MODE Word Flag
EC7A:           ORAA    #$04            ; SET b2, LOW BATTERY
EC7C:           STAA    L000E           ; A/F MODE Word Flag

EC7E:   LEC7E   BRA     LECD7


EC80:   LEC80   LDAA    L000E           ; A/F MODE Word Flag
EC82:           ANDA    #$FB            ; CLEAR b2, LOW BATTERY
EC84:           STAA    L000E           ; A/F MODE Word Flag

EC86:   LEC86   LDAA    L0001
EC88:           BMI     LEC91
                                        ; ... else
EC8A:           LDAA    L0002           ; FLAG WD
EC8C:           SEC                     ; SECURE INTERUPTS
EC8D:           BITA    #$10            ; b4
EC8F:           BNE     LEC97           ; BR IF b4
                                        ; ... else
EC91:   LEC91   LDAA    L00CB           ; IAC STEPS
EC93:           SUBA    L00FD           ; CURRENT DISPLAY IAC STEPS
EC95:           BEQ     LECD7           ; BR IF DISP LT ....
                                        ; ... else
EC97:   LEC97   BITB    #$20            ; b5
EC99:           BEQ     LECD7           ; BR IF NOT b5
EC9B:           BCC     LECA8           ; BR IF
                                        ; ... else
EC9D:           ANDB    #$FA            ; CLR b2 & b0

EC9F:           LDAA    L00FD           ; CURRENT DISPLAY IAC STEPS
ECA1:           BEQ     LECBC           ; BR IF Z
                                        ; ... else
```

```
ECA3:           DECA                        ; DECT IAC STEPS
ECA4:           STAA    L00FD               ; CURRENT DISPLAY IAC STEPS

ECA6:           BRA     LECBC
        ;-----------------------------------------------

ECA8:   LECA8   ORAB    #$01                ; SET b0

ECAA:           LDAA    L00FD               ; CURRENT DISPLAY IAC STEPS
ECAC:           CMPA    LD5DE               ; 145, MAX IAC
ECAF:           BCC     LECD7               ; BR IF IAC COUNTS GT 145
                                            ; ... else
ECB1:           INC     L00FD               ; CURRENT DISPLAY IAC STEPS
ECB4:           LDAA    L000F
ECB6:           BITA    #$40
ECB8:           BNE     LECBC
                                            ; ... else
ECBA:           ORAB    #$04                ; Set b2

ECBC:   LECBC   TBA
ECBD:           ANDA    #$C0
ECBF:           BEQ     LECCB
                                            ; ... else
ECC1:           CMPA    #$C0
ECC3:           BEQ     LECCB
                                            ; ... else
ECC5:           BITB    #$01
ECC7:           BNE     LECCF
                                            ; ... else
ECC9:           BRA     LECD3


ECCB:   LECCB   BITB    #$01
ECCD:           BNE     LECD3
                                            ; ... else
ECCF:   LECCF   EORB    #$40                ; TOGGLE b6
ECD1:           BRA     LECDF

ECD3:   LECD3   EORB    #$80                ; TOGGLE b7

ECD5:           BRA     LECDF


ECD7:   LECD7   ORAB    #$20                ; SET b5

ECD9:           BRA     LECDD



        ;
        ; HERE WITH HI Vbatt
        ;
ECDB:   LECDB   ANDB    #$DF                ;
ECDD:   LECDD   ANDB    #$FB                ;
ECDF:   LECDF   STAB    L00DF               ;
                                            ;
ECE1:           LDAA    L0881               ;
ECE4:           ANDA    #$F8                ;
ECE6:           ASLB                        ;
ECE7:           BPL     LECEB               ;
                                            ; ... else
ECE9:           ORAA    #$02                ; SET b1
ECEB:   LECEB   BCC     LECEF               ;
                                            ; ... else
ECED:           ORAA    #$01                ; SET b0
ECEF:   LECEF   ASLB                        ;
```

```
ECF0:           BPL     LECF4               ;
                                            ; ... else
ECF2:           ORAA    #$04                ; SET b2
ECF4:   LECF4   STAA    L0881               ;

ECF7:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 4
        ;
        ;-------------------------------------------------
ECF8:           JSR     LFC8A
ECFB:           JSR     LFCB9

ECFE:           LDAB    L0001
ED00:           BMI     LED10

ED02:           LDAA    L00E3               ; COOL, 1k pu
ED04:           STAA    L0024               ; 1K PU COOL

ED06:           CLRB

ED07:           LDAA    LD28D               ;  451 mvdc, o2 FILT INIT
ED0A:           STD     L003F
ED0C:           STD     L0041

ED0E:           STAA    L003E               ; o2 (A/D),  mvdc = 0.2304 * A/D VAL

ED10:   LED10   JMP     LFDEA               ; CHECK HEADS UP
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE F
        ;
        ;-------------------------------------------------
ED13:           LDAA    L0070
ED15:           BITA    #$10                ; b4
ED17:           BEQ     LED1A               ; BR IF NOT b4
                                            ; ... else
ED19:           RTS
        ;-------------------------------------------------




        ;-------------------------------------------------
        ; VOLTAGE COMP MULT vs BATTERY
        ; ECM TYPE $42,  (fuel)
        ;
        : TBL = MULT * 128
        ;-------------------------------------------------
ED1A:   LED1A   LDAA    L0046               ; BATTERY VDC
                                            ;
ED1C:           LDX     #$D3E9              ; VOLTAGE COMP vs BATTERY (17 LINES)
                                            ;
ED1F:           JSR     LFB49               ; 2d LOOK UP ROUTINE
                                            ;
ED22:           STAA    L00B2               ; SAVE Vbatt COMP MULT


        ;-------------------------------------------------
        ; Decel COOLANT FACTOR vs COOLANT TEMP
        ;
```

```
        ;
        ;   Table = factor * 32
        ;-----------------------------------------------
ED24:           LDAA    L00E3               ; COOL, 1k pu
ED26:           COMA
ED27:           STAA    L0058               ; COOL (INV)

ED29:           LDX     #$D3FA              ; Decel COOLANT FACTOR vs COOLANT TEMP

ED2C:           JSR     LFB40               ; 2d lk up w/line cnt in hdr

ED2F:           STAA    L009D


        ;-------------------------------------------------
        ; ACCEL ENRICH vs COOLANT
        ;
        ;  Dissassemby of ASDZ, LINES =  17
        ;  04-20-1994, 16:58:25
        ;
        ;  TBL =  32  * FACTOR
        ;-------------------------------------------------
ED31:           LDAA    L0058               ; COOL (INV)
ED33:           LDX     #$D40C              ; ACCEL ENRICH vs COOLANT, (17 LINES)

ED36:           JSR     LFB49               ; 2d LOOK UP ROUTINE

ED39:           STAA    L0098
        ;-----------------------------------------------
        ; INV COOL TBL, (1K P/U)
        ; UESD FOR BPW CALC
        ;
        ; TBL = 50,000/DEG K
        ;-----------------------------------------------
ED3B:           LDAA    L00E3               ; COOL, 1k pu
                                            ;
ED3D:           LDX     #$D3D8              ; INV COOL TBL, (1K P/U) ( 17 LINES)
ED40:           JSR     LFB49               ; 2d LOOK UP ROUTINE
                                            ;
ED43:           STAA    L00AA               ; INV COOL (fm LK UP)


ED45:           LDAB    L000D
ED47:           BITB    #$20                ; b5
ED49:           BEQ     LED59               ; BR IF NOT b5
                                            ; ... else
ED4B:           LDAA    L00E3               ; COOL, 1k pu
ED4D:           CMPA    LD029               ; Pwr Enr SPK Decay cool THRESH
ED50:           BCC     LED59
                                            ; ... else
ED52:           LDAA    L001C               ; RPM
ED54:           CMPA    LD028               ; 2800 RPM, MIN RPM FOR SPK SA DECAY
ED57:           BHI     LED5E
                                            ; ... else
ED59:   LED59   JSR     LFDCB

ED5C:           BRA     LED83


ED5E:   LED5E   LDAA    L006F               ; PWR ENR SPK TIMER
ED60:           BEQ     LED6F               ; BR IF TIMER Z
                                            ; ... else
ED62:           BITB    #$02                ; b1
ED64:           BNE     LED6C               ;
                                            ; ... else
ED66:           LDAB    L0070               ;
```

```
ED68:           ANDB    #$F0                ; 1111 0000
ED6A:           BNE     LED81               ;
                                            ; ... else
ED6C:   LED6C   DECA                        ; DECR  PWR ENR SPK TIMER

ED6D:           BRA     LED81


ED6F:   LED6F   ORAB    #$02                ; SET b1
ED71:           STAB    L000D

ED73:           LDAB    L006E               ; PWR ENR SPK
ED75:           ADDB    LD02A               ; Pwr Enr SK ADV INCREASE, Deg, 1.4 Deg
ED78:           BCC     LED7C               ; BR IF NO OVERFLOW
                                            ; ... else
ED7A:           LDAB    #255                ; FORCE MAX VALUE
ED7C:   LED7C   STAB    L006E               ; PWR ENR SPK

ED7E:           LDAA    LD026               ; 2 SEC'S, SPK Time out reduce, (Sec * 5)-1))
ED81:   LED81   STAA    L006F               ; PWR ENR SPK TIMER

ED83:   LED83   LDAA    L0058               ; COOL (INV)

ED85:           LDAB    L0001
ED87:           BMI     LEDDA

ED89:           LDAB    L00DE           ;
ED8B:           BITB    #$08            ; b3
ED8D:           BNE     LEDBA           ; BR IF b3

        *===========================================
        * TIME OUT AFR Vs. COOLANT
        * (AFR STARTUP (CHOKE))
        *
        * AFTER START UP AFR
        * ICREASES WITH TIME, SIMULATING A CHOKE.
        *
        * (TBL VALUED IS SUB'ED FROM CURRENT AFR,
        *   --> SMALL NUM IS LEAN)
        *
        *   TBL =  10  * AFR
        *===========================================
ED8F:           LDX     #$D427              ; TIME OUT AFR vs COOLANT (17 LINES)
ED92:           JSR     LFB49               ; 2d LK UP

ED95:           STAA    L00E5               ; TIME OUT AFR

        ;-------------------------------------------
        ; SPK TIME OUT vs COOL
        ;
        ; INITIAL SA WHICH IS DECAYED IN SOME TIME PERIOD
        ; SET BY TBL LD173
        ;
        ; VAL = SPK ADV * (256/90)
        ;-------------------------------------------
ED97:           LDX     #$D16D              ; SPK TIME OUT vs COOL
ED9A:           LDAA    L0058               ; COOL (INV)

ED9C:           JSR     LFB40               ;  2d lk up w/line cnt in hdr

ED9F:           STAA    L00E7               ; TIME OUT SPARK ADV.


        ;-------------------------------------------
        ; SPK TIME OUT DECAY DELAY vs COOL
        ;
```

```
        ;  TBL = SECONDS
        ;---------------------------------------------
EDA1:           LDX     #$D173              ; SPK TIME OUT DECAY DELAY vs COOL
EDA4:           LDAA    L0058               ; COOL (INV)
EDA6:           JSR     LFB40               ;  2d lk up w/line cnt in hdr

EDA9:           STAA    L00E8               ; Sec's SPK TIME OUT DECAY DELAY

EDAB:           LDAB    LD2D3               ; 2.0 Sec's, COOL TIME OUT (CHOKE), N = sec *

EDAE:           LDAA    L00E3               ; COOL, 1k pu
EDB0:           CMPA    LD2D5               ; 80c THRESH FOR TIME OUT DECAY,  TBL 3
EDB3:           BHI     LEDB8               ; BR IF COOL GT THRESH
                                            ; ... else
EDB5:           LDAB    LD2D4               ; 2.0 Sec's, HOT TIME OUT DECAY
EDB8:   LEDB8   STAB    L00E6

        ;---------------------------------------------
        ; TIME OUT DECAY MULT vs COOL
        ;
        ; AFTER START UP AFR,
        ; INCREASES WITH TIME, SIMULATING A  CHOKE.
        ;
        ; TABLE = FACTOR * 256
        ;---------------------------------------------
EDBA:   LEDBA   LDX     #$D438              ; TIME OUT DECAY MULT vs COOL (17 LINES)
EDBD:           LDAA    L0058               ; COOL (INV)
EDBF:           JSR     LFB49               ; 2d LK UP Routine
                                            ;
EDC2:           STAA    L00B7               ; TIME OUT DECAY MULT.
                                            ;
        ;---------------------------------------------
        ; CRANK AFR vs COOL
        ;
        ; AFR DURING CRANK
        ;
        ; TBL =  10  * AFR
        ;---------------------------------------------
EDC4:           LDX     #$D449              ; CRANK AFR vs COOL TABLE (17 LINES)
EDC7:           LDAA    L0058               ; COOL (INV)
EDC9:           JSR     LFB49               ; 2d LK UP ROUTINE

EDCC:           STAA    L00B6               ; CRANK AFR

        ;---------------------------------------------
        ; SPK TIME OUT DECAY MULT vs COOL
        ;
        ; TBL = %MULT * 2.56
        ;---------------------------------------------
EDCE:           LDX     #$D179              ; SPK TIME OUT DECAY MULT vs COOL
EDD1:           LDAA    L0058               ; COOL (INV)
EDD3:           JSR     LFB40               ; 2d lk up w/line cnt in hdr

EDD6:           STAA    L006C               ; SPK TIME OUT DECAY MULT

EDD8:           BRA     LEE55


EDDA:   LEDDA   LDAA    L00E6
EDDC:           BNE     LEE29
                                            ; ... else
EDDE:           LDAA    L00C0
EDE0:           BEQ     LEE00
                                            ; ... else
EDE2:           CMPA    LD2FF               ; 10 sec DELAY FOR COLD AFR PK to DRV CHANGE
EDE5:           BNE     LEDF5
```

```
                                        ; ... else
EDE7:           LDAB    L00E3           ; COOL, 1k pu
EDE9:           CMPB    LD2FD           ; 200 Deg c THRES FOR PK to DRIVE (1K PU)
EDEC:           BLS     LEDF5           ;
                                        ; ... else
EDEE:           LDAB    L0801           ;  MCU2 I/O
EDF1:           BITB    #$10            ; b4, PARK NEUTRAL, 0 = DRIVE
EDF3:           BNE     LEE31           ; BR IF b4 (IN PK/NEUT)
                                        ; ... else
EDF5:   LEDF5   DECA
EDF6:           STAA    L00C0
EDF8:           BNE     LEE31
                                        ; ... else
EDFA:           LDAB    L000E           ; A/F MODE Word Flag
EDFC:           ORAB    #$08            ; SET b3 4->3 DN SHFT FOR TCC UN-LOCK
EDFE:           STAB    L000E           ; A/F MODE Word Flag

EE00:   LEE00   LDAA    L00B3
EE02:           BNE     LEE2E
                                        ; ... else
EE04:           LDAA    LD2D2           ; 1.8 Sec's, COLD AFR (CHOKE) TIME OUT, N = SE
EE07:           STAA    L00B3           ;
                                        ;
EE09:           LDAA    L00E5           ;
EE0B:           LDAB    L00B7           ;
EE0D:           MUL                     ;
                                        ;
EE0E:           LDAB    L000E           ; A/F MODE Word Flag
EE10:           BITB    #$08            ; b3 4->3 DN SHFT FOR TCC UN-LOCK
EE12:           BNE     LEE25           ; BR IF b3
                                        ; ... else
EE14:           CMPA    LD2FE           ; 2.7:1, RATIO AFR TIME OUT FOR COLD PK to DRI
EE17:           BHI     LEE25           ; BR IF
                                        ; ... else
EE19:           LDAB    L00E3           ; COOL, 1k pu
EE1B:           CMPB    LD2FD           ; 200 Deg c THRES FOR PK to DRIVE (1K PU)
EE1E:           BLS     LEE25           ;
                                        ; ... else
EE20:           LDAB    LD2FF           ; 10 sec DELAY FOR COLD AFR PK to DRV CHANGE
EE23:           STAB    L00C0

EE25:   LEE25   STAA    L00E5

EE27:           BRA     LEE31


EE29:   LEE29   DEC     L00E6

EE2C:           BRA     LEE31


EE2E:   LEE2E   DEC     L00B3
EE31:   LEE31   LDAA    L00E8
EE33:           BEQ     LEE40
                                        ; ... else
EE35:           LDAA    L0070
EE37:           ANDA    #$F0
EE39:           BNE     LEE55
                                        ; ... else
EE3B:           DEC     L00E8

EE3E:           BRA     LEE55


EE40:   LEE40   LDAA    L006D
EE42:           BEQ     LEE49
```

```
                                        ; ... else
EE44:           DEC     L006D
EE47:           BRA     LEE55


EE49:   LEE49   LDAA    LD026           ; 2 SEC'S, SPK Time out reduce, (Sec * 5)-1))
EE4C:           STAA    L006D

            ;
            ; MULT TIME OUT ADV TIME MULT FACTOR
            ;
EE4E:           LDAA    L00E7           ; TIME OUT SPARK ADV.
EE50:           LDAB    L006C           ; SPK TIME OUT DECAY MULT
EE52:           MUL                     ;
EE53:           STAA    L00E7           ; TIME OUT SPARK ADV.


        *===========================================
        * COLD ENG TEMP AFR vs COOLANT
        * (OPN LP IF NOT CRANK & CHOKE)
        *  OPEN LOOP AFR Vs. COOL
        *
        *  ASDZ, 17 LINES
        *
        *  SUM VAC AFR (LD41D) + COOL AFR (LD45A)
        *
        *  TBL = AFR * 10
        *===========================================
EE55:   LEE55   LDX     #$D45A          ; COLD ENG TEMP AFR vs COOLANT, (17 LINES)

EE58:           LDAA    L0058           ; COOL (INV)

EE5A:           JSR     LFB49           ; 2d LK UP

EE5D:           STAA    L00B5           ; COLD ENG TEMP AFR

EE5F:           LDAA    L0001
EE61:           BPL     LEED6
                                        ; ... else
EE63:           LDAA    L000B
EE65:           BITA    #$02            ; b1
EE67:           BEQ     LEE6E           ; BR IF NOT b1
                                        ; ... else
EE69:           CLR     L009C

EE6C:           BRA     LEED6


EE6E:   LEE6E   LDAB    L00DE

EE70:           LDAA    L009C           ; CLOSED LOOP ENABLE TIMER
EE72:           CMPA    LD29A           ; 35c, COOL Min for CLS LP Enable
EE75:           BCC     LEE7C           ; BR IF COOL GT THRESH
                                        ; ... else
EE77:           INCA                    ; INCR TIMER
EE78:           STAA    L009C           ; CLOSED LOOP ENABLE TIMER

EE7A:           BRA     LEE80


EE7C:   LEE7C   ANDB    #$FE
EE7E:           STAB    L00DE

EE80:   LEE80   BITB    #$01            ; b0
EE82:           BEQ     LEED6           ; BR IF
                                        ; ... else
```

```
EE84:           LDAA    L0002           ; FLAG WD
EE86:           ANDA    #$30            ; MASK FOR b0 & b1
EE88:           BNE     LEEAC           ; BR IF NOT b0 & b1
                                        ; ... else
EE8A:           LDAB    L00DE
EE8C:           BITB    #$02
EE8E:           BNE     LEEAC
                                        ; ... else
EE90:           LDD     L00EB
EE92:           LSRD

EE93:           LDAA    L0024           ; 1K PU COOL
EE95:           CMPA    LD296           ; 60 Deg c, (140f) CLS LP Timer WARM Thresh, (
EE98:           BLS     LEEA1           ; BR IF COOL LT THRESH
                                        ; ... else
EE9A:           CMPB    LD298           ; 47.5 Sec COLD CLS LP Timer
EE9D:           BCC     LEEA6

EE9F:           BRA     LEED6


EEA1:   LEEA1   CMPB    LD297           ; 10.0 Sec WARM CLS LP Timer
EEA4:           BCS     LEED6
                                        ; ... else
EEA6:   LEEA6   LDAA    L00DE
EEA8:           ORAA    #$02
EEAA:           STAA    L00DE

EEAC:   LEEAC   LDAA    L0021           ; COOLANT
EEAE:           CMPA    LD299           ; 35c, COOL Min for CLS LP Enable (64d)
EEB1:           BLS     LEED6
                                        ; ... else
EEB3:           LDAB    L000E           ; A/F MODE Word Flag

EEB5:           LDAA    L0000
EEB7:           BITA    #$02
EEB9:           BEQ     LEEC2
                                        ; ... else
EEBB:           LDAA    L040D
EEBE:           ANDA    #$03            ; b0 & b1
EEC0:           BNE     LEED6
                                        ; ... else
EEC2:   LEEC2   LDAA    L0008           ; STATUS
EEC4:           ORAA    #$80            ; SET b7
EEC6:           STAA    L0008

EEC8:           ORAB    #$A0            ;

EECA:           LDAA    L0002           ; FLAG WD
EECC:           ORAA    L0003
EECE:           BITA    #$02            ; b1
EED0:           BEQ     LEEDA           ; BR IF
                                        ; ... else
EED2:           ANDB    #$7F

EED4:           BRA     LEEDA


EED6:   LEED6   LDAB    L000E           ; A/F MODE Word Flag
EED8:           ANDB    #$5F            ; CLEAR b7 & b5, CLSD LOOP, OLD HI GR FLAG
EEDA:   LEEDA   STAB    L000E           ; A/F MODE Word Flag

EEDC:           BPL     LEF02
                                        ; ... else
EEDE:           LDAA    L0009
EEE0:           ANDA    #$48
```

```
EEE2:           BNE     LEF02
                                        ; ... else
EEE4:           LDAA    L00A5           ; AFR
EEE6:           CMPA    LD2AA           ; AFR (STOCH)
EEE9:           BNE     LEF02           ; BR IF AFR NE STOCH
                                        ; ... else

        ;
        ; CK BLM MAP QUAL'S
        ;                               ;
EEEB:           LDAA    L0026           ; S/D MAP
EEED:           CMPA    LD29C           ; 104.1 Kpa MAP UPPER THRESH FOR BLM
EEF0:           BHI     LEF02           ; BR IF MAP GT MAX MAP THRESH
                                        ; ... else
EEF2:           CMPA    LD29B           ; 10.7 Kpa MAP THRESH FOR BLM
EEF5:           BCS     LEF02           ;  BR IF MAP LT MIN MAP THRESH

        ;
        ; CK BLM RPM QUAL'S
        ;
EEF7:           LDAA    L001C           ; RPM/25
EEF9:           CMPA    LD29D           ; 3500 RPM UPPER BLM THRESH
EEFC:           BCC     LEF02           ; BR IF RPM GT MAX RPM THRESH
                                        ; ... else
EEFE:           ORAB    #$02            ; SET b5

EF00:           BRA     LEF04


EF02:   LEF02   ANDB    #$FD            ; CLEAR b1, BLM ENABLE
EF04:   LEF04   STAB    L000E           ; A/F MODE Word Flag

EF06:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 5
        ;
        ;-------------------------------------------------
            ;
            ; FILTER ...
            ;
EF07:           LDX     L0041           ;
EF09:           LDAB    LD55F           ; MJR LP o2 COEF
                                        ;
EF0C:           LDAA    L003E           ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
EF0E:           JSR     LFB12           ; LAG FILTER
                                        ;
EF11:           STD     L0041           ;
                                        ;
EF13:           LDAA    L0021           ; COOLANT
EF15:           CMPA    LD562           ; 200c COLD DIVERT THRESH, (255)
EF18:           BCS     LEF7B           ;
                                        ; ... else
EF1A:           LDAA    L000B
EF1C:           ASRA
EF1D:           BCS     LEF7B
                                        ; ... else
EF1F:           LDAA    L0002           ; FLAG WD
EF21:           ORAA    L0003
EF23:           BITA    #$02
EF25:           BNE     LEF3D
                                        ; ... else
EF27:           LDAA    L000D
EF29:           BITA    #$20
```

```
EF2B:           BEQ     LEF45
                                        ; ... else
EF2D:           LDAB    L007E           ; AIR FOR ENRICH TIMER
EF2F:           CMPB    LD563           ; 5 Sec Air to Ports if in PWR enrich
EF32:           BCC     LEF7B           ; BR IF TIMER GT 5 sec's
                                        ; ... else
EF34:           LDAB    L0070
EF36:           ANDB    #$F0
EF38:           BNE     LEF3D
                                        ; ... else
EF3A:           INC     L007E           ; 5 Sec Air to Ports if in PWR enrich

EF3D:   LEF3D   LDAB    L0008           ; STATUS
EF3F:           ANDB    #$FE            ; CLEAR b0
EF41:           ORAB    #$04            ; SET b2

EF43:           BRA     LEF81

EF45:   LEF45   CLRB
EF46:           STAB    L007E
EF48:           LDAA    L00DE
EF4A:           BITA    #$02
EF4C:           BNE     LEF7B
                                        ; ... else
EF4E:           LDAA    L001A           ; RPM/25
EF50:           CMPA    LD560           ; 144C, LOW TEMP ????
EF53:           BHI     LEF7B
                                        ; ... else
EF55:           LDAA    L002C           ; MAP, Kpa
EF57:           CMPA    LD561           ; 0 Kpa MAX MAP FOR DIVERT
EF5A:           BCS     LEF7B           ; BR IF
                                        ; ... else
EF5C:           LDAA    L0008           ; STATUS
EF5E:           BPL     LEF3D           ; b7
                                        ; ... else
EF60:           LDAB    L007D
EF62:           BNE     LEF78
                                        ; ... else
EF64:           LDAB    LD55E           ; AIR DIVERT TIME

EF67:           LDAA    L0033
EF69:           SUBA    L0026           ; S/D MAP
EF6B:           BLS     LEF72
                                        ; ... else
EF6D:           CMPA    LD55D           ; 0 Kpa DIFF MAP THRESH, AIR MANAGMENT
EF70:           BHI     LEF79
                                        ; ... else
EF72:   LEF72   LDAB    L0008           ; STATUS
EF74:           ANDB    #$FA            ; 1111 1010
EF76:           BRA     LEF81


EF78:   LEF78   DECB
EF79:   LEF79   STAB    L007D

EF7B:   LEF7B   LDAB    L0008
EF7D:           ORAB    #$01            ; SET b0,
EF7F:           ANDB    #$FB            ; CLR b2,
EF81:   LEF81   STAB    L0008

EF83:           LDAB    L0026           ; S/D MAP
EF85:           STAB    L0033

EF87:           LDAA    L0002           ; FLAG WD.
                                        ;       b6 =1 = Vbatt Over Voltage
                                        ;
```

```
EF89:           LDAB    L0045           ; BATTERY VOLTS, (A/D, 0-255) Vbatt/10
EF8B:           CMPB    #171            ; 17.1 VDC
EF8D:           BCS     LEF98           ; BR IF VbatLT 17.1
                                        ; ... else
EF8F:           CLRB

EF90:           BITA    #$40            ; b6. (Over Voltage)
EF92:           BNE     LEFAD           ; BR IF b6
                                        ; ... else
EF94:           ORAA    #$40            ; SET b6

EF96:           BRA     LEF9A


EF98:   LEF98   ANDA    #$BF            ; CLR b6. (Over Voltage)
EF9A:   LEF9A   STAA    L0002           ; FLAG WD

EF9C:           CLRB
EF9D:           LDAA    L0001
EF9F:           BMI     LEFB0
                                        ; ... else
EFA1:           LDAA    L000B
EFA3:           BMI     LEFA8
                                        ; ... else
EFA5:           CLRA

EFA6:           BRA     LEFD1


EFA8:   LEFA8   LDAA    #$00FC
EFAA:           DECB

EFAB:           BRA     LEFD1


EFAD:   LEFAD   PSHB
EFAE:           BRA     LEFE9


EFB0:   LEFB0   CLRA
EFB1:           LDAB    L0005
EFB3:           BPL     LEFBB
                                        ; ... else
EFB5:           BITB    #$40
EFB7:           BNE     LEFBB
                                        ; ... else
EFB9:           ORAA    #$80            ; SET b3

EFBB:   LEFBB   BITB    #$04            : b2
EFBD:           BEQ     LEFC1           ; BR IF NOT b2
                                        ; ... else
EFBF:           ORAA    #$04            ; SET b2

EFC1:   LEFC1   LDAB    L0008           ; STATUS
EFC3:           BITB    #$04            ; b2
EFC5:           BEQ     LEFC9           ; BR IF NOT b2
                                        ; ... else
EFC7:           ORAA    #$10            ; SET b4

EFC9:   LEFC9   BITB    #$01            ; b0
EFCB:           BNE     LEFCF           ; BR IF b0
                                        ; ... else
EFCD:           ORAA    #$20            ; SET b5

EFCF:   LEFCF   LDAB    L0080           ; Pct EGR
```

```
EFD1:   LEFD1   EORA    LD008             ; COLD START THROTLE KICKER ENABLE
EFD4:           PSHA

EFD5:           LDAA    L000A             ;
EFD7:           BITA    #$04              ; b2
EFD9:           BEQ     LEFE1             ; BR IF b1
                                          ; ... else
EFDB:           SUBB    LD537             ; 99.6% EGR D.C, DECREMENT FOR TEST IN WORK
EFDE:           BCC     LEFE1             ; BR IF %EGR GT THRESH
                                          ; ... else
EFE0:           CLRB
EFE1:   LEFE1   LDAA    LD005             ; Opt Word, 1000 1000
EFE4:           BITA    #$10              ; b4, 1 = EGR INVERSE D.C.
EFE6:           BEQ     LEFE9
                                          ; ... else
EFE8:           COMB
EFE9:   LEFE9   LDX     #$F000

EFEC:           LDAA    LD005             ; Opt Word, 1000 1000
EFEF:           BITA    #$08              ; b3, 1 = EGR DC PRR Opt 1 = 32 Hz (BP)
EFF1:           BEQ     LEFF9             ; BR IF NOT b3
                                          ; .. else
EFF3:           LDX     #$D000
EFF6:           ABX
EFF7:           ABX
EFF8:           ABX
EFF9:   LEFF9   ABX
EFFA:           STX     LBC16             ; ECU HARDWARE

EFFD:           LDAB    L0801             ; MCU2 I/O
F000:           ANDB    #$F0              ; LSB MASK, CLRAR TCC, AIR INJ & A/C BITS

F002:           PULA
F003:           TSTA
F004:           BPL     LF008
                                          ; ... else
F006:           ORAB    #$08              ; SET b3, 1 = A/C OFF

F008:   LF008   BITA    #$10              ; b4
F00A:           BEQ     LF00E             ; BR IF NOT b4
                                          ; ... else
F00C:           ORAB    #$01              ; SET b0, AIR INJ ENABLED

F00E:   LF00E   BITA    #$20              ; b5
F010:           BEQ     LF014             ; BR IF NOT b5
                                          ; ... else
F012:           ORAB    #$02              ; SET b1, AIR DISABLED
F014:   LF014   STAB    L0801             ; MCU2 I/O

F017:           LDX     #$D3FF            ; 54,271 ? OR ADDRESS ?
F01A:           BITA    #$04
F01C:           BNE     LF021
                                          ; ... else
F01E:           LDX     #$D000            ;
F021:   LF021   STX     LBC18             ; ECU HARDWARE

F024:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE B
        ;
        ;-------------------------------------------------
F025:           LDAA    L0000
F027:           BITA    #$10
```

```
F029:           BNE     LF031
                                                ; ... else
F02B:           LDAA    #159
F02D:           CMPA    L0037
F02F:           BHI     LF037
                                                ; ... else
F031:   LF031   CLRA
F032:           CLRB
F033:           STD     L0034                   ; FILT Vss/1

F035:           BRA     LF071


F037:   LF037   LDD     L003A
F039:           SUBD    L0038
F03B:           STD     L0051

F03D:           LDD     L003C
F03F:           SUBD    L003A
F041:           ADDD    L0051
F043:           RORA
F044:           RORB
F045:           STD     L0053
F047:           STD     L0057

F049:           LDD     #$01CC

F04C:           JSR     LFB92

            ;
            ; FILTER VSS
            ;
F04F:           LDX     L0034                   ; FILT Vss/1
F051:           LDAB    LD56B                   ; MPH LAG FILT COEF

F054:           JSR     LFB12                   ; LAG FILTER

F057:           STD     L0034                   ; FILT Vss/1


F059:           ASLB
F05A:           ADCA    #$0000
F05C:           LDAB    #$00CD
F05E:           MUL
F05F:           ASLD
F060:           BCS     LF06F
                                                ; ... else
F062:           ASLD
F063:           BCS     LF06F
                                                ; ... else
F065:           TSTB
F066:           BPL     LF06B
                                                ; ... else
F068:           INCA
F069:           BEQ     LF06F
                                                ; ... else
F06B:   LF06B   CMPA    #$00C0
F06D:           BLS     LF071
                                                ; ... else
F06F:   LF06F   LDAA    #$00C0
F071:   LF071   STAA    L0036

F073:           LDAA    LD007                   ; OPT WORD 3, 0010 0100
F076:           BPL     LF07B
                                                ; .... else
F078:           JMP     LF16C
```

```
F07B:   LF07B   EORA    L0801           ;  MCU2 I/O
F07E:           ANDA    #$20            ; CLR ALL XCEPT b5
F080:           STAA    L0058           ;

F082:           LDAA    L0021           ; COOLANT
F084:           CMPA    LD564           ; 65c, TCC LOWER TEMP THRESH (112d)
F087:           BCC     LF08C           ; BR IF COOL GT THRESH
                                        ; ... else
F089:   LF089   JMP     LF155


F08C:   LF08C   LDAA    LD007           ; OPT WORD 3, 0010 0100
F08F:           BITA    #$04            ; b2, 1 = Decell Fuel Cut Off, TCC UNLOCK
F091:           BEQ     LF099           ; BR IF NOT b2
                                        ; .,.. else
F093:           LDAB    L0008           ; STATUS
F095:           BITB    #$08            ; b3, FUEL C/O
F097:           BNE     LF089           ; BR IF b3
                                        ; ... else

        ;
        ; INDEX TCC VALUES
        ;
F099:   LF099   LDX     #$D565          ; POINT TO TCC VAL'S
                                        ;
F09C:           LDAA    L0005           ;
                                        ;
F09E:           LDAB    $01,X           ; 0 MPH, TCC COAST RELEASE
                                        ;
F0A0:           BITA    #$10            ; b4
F0A2:           BNE     LF0A8           ; BR IF b4
                                        ; ... else
F0A4:           ADDB    #16             ; ADD 16 MPH ???
F0A6:           BCS     LF0AC           ; BR IF Vss LT 16 + LD566 MPH
                                        ; ... else
F0A8:   LF0A8   CMPB    L0036           ;
F0AA:           BLS     LF0B2           ;
                                        ; ... else
F0AC:   LF0AC   ANDA    #$EF            ; CLR b4
F0AE:           LDAB    2,X             ; 0.14 VDC TPS, TCC COAST LO MPH LD LIMIT

F0B0:           BRA     LF0B6


F0B2:   LF0B2   ORAA    #$10            ; SET b4
                                        ;
F0B4:           LDAB    3,X             ; 0.14 VDC TPS, TCC COAST HI MPH LD LIMIT
                                        ;
F0B6:   LF0B6   STAA    L0005
F0B8:           BPL     LF0BF
                                        ; ... else
F0BA:           SUBB    4,X             ; 1d TPS HYST FOR COAST LD'S ,(2 ABOVE)
F0BC:           BCC     LF0BF
                                        ; ... else
F0BE:           CLRB
F0BF:   LF0BF   PSHB
F0C0:           JSR     LFA43

F0C3:           LDAB    LD565           ; TCC LD PARAM  SELECT
F0C6:           CMPB    #$03            ; b0 & b1, = TCC LD PARAM  SELECT
F0C8:           BNE     LF0CC
                                        ; ... else
F0CA:           BSR     LF108
```

```
F0CC:   LF0CC   PULB
F0CD:           CBA
F0CE:           BCS     LF089
                                        ; ... else

        *=============================================
        * HI GEARS TCC
        *
        *=============================================
F0D0:           LDX     #$D589          ; INDEX ...

F0D3:           LDAA    L0058           ; COOL (INV)
F0D5:           BEQ     LF0DA
                                        ; ... else
        *=============================================
        * LO GEARS TCC
        *
        *=============================================
F0D7:           LDX     #$D56F          ; INDEX ...

F0DA:   LF0DA   LDAB    #$000E

F0DC:           LDAA    L0005
F0DE:           BPL     LF0E4
                                        ; ... else
F0E0:           INX
F0E1:           INX
F0E2:           LDAB    #$0001

F0E4:   LF0E4   LDAA    L0034           ; FILT Vss/1
F0E6:           CMPA    0,X             ; MPH TO UN LOCK
F0E8:           BCS     LF155
                                        ; ... else
F0EA:           INX                     ; INCR TO RPM
F0EB:           LDAA    L001C
F0ED:           CMPA    0,X             ; RPM TO UN LOCK
F0EF:           BLS     LF155
                                        ; ... else
F0F1:           ABX
F0F2:           LDAA    L0005
F0F4:           BPL     LF11C
                                        ; ... else
F0F6:           LDAA    LD006           ; Opt Word 2, 1101 0000
F0F9:           BITA    #$02
F0FB:           BEQ     LF11C
                                        ; ... else
F0FD:           LDAB    #$0060

F0FF:           LDAA    L001A           ; RPM/25
F101:           ASLA
F102:           BCC     LF106
                                        ; ... else
F104:           LDAA    #255

F106:   LF106   BRA     LF120


F108:   LF108   LDAA    L0049           ; CURRENT TPS VALUE
F10A:   LF10A   PSHA


        ;---------------------------------------------
        ; TCC TPS MULT vs BARO
        ;
        ; USED FOR TCC & MAN XMISSION
        ;
```

```
        ; TBL = FACTOR * 128
        ;-----------------------------------------------
F10B:           JSR     LFD18               ; GET PROCESSED BARO VALUE IN A REG

F10E:           LDX     #$D5BA              ; TCC TPS MULT vs BARO

F111:           JSR     LFB45               ; 2d LK UP

F114:           PULB
F115:           MUL
F116:           ASLD
F117:           BCC     LF11B               ; BR OF NO OVERFLOW
                                            ; ... else
F119:           LDAA    #255                ; FORCE MAX VALUE

F11B:   LF11B   RTS
        ;-----------------------------------------------

F11C:   LF11C   LDAB    #32                 ;
F11E:           LDAA    L0036               ;
F120:   LF120   JSR     LFB45               ; 2D LOOK UP
                                            ;
F123:           BEQ     LF155               ; BR IF Z
                                            ; ... else
F125:           PSHA
F126:           BSR     LF108

F128:           PULB
F129:           CBA
F12A:           BHI     LF155
                                            ; ... else
F12C:           LDAA    L0005
F12E:           BITA    #$40                ; b6
F130:           BEQ     LF13B               ; BR IF NOT b6,
                                            ; ... else
F132:           DEC     L005A
F135:           BNE     LF14A
                                            ; ... else
F137:           ANDA    #$00BF

F139:           BRA     LF14A


F13B:   LF13B   LDAB    L0058               ; COOL (INV)
F13D:           BEQ     LF14A
                                            ; ... else
F13F:           BITA    #$20
F141:           BNE     LF14A
                                            ; ... else
F143:           ORAA    #$40

F145:           LDAB    LD56C               ; 100 msec, TCC DLY AFTER 4 -> 3 DN SHFT,  1 =
F148:           STAB    L005A

F14A:   LF14A   LDAB    L0059
F14C:           BEQ     LF151
                                            ; ... else
F14E:           DECB

F14F:           BRA     LF15A


F151:   LF151   ORAA    #$80                ; SET b7

F153:           BRA     LF165
```

```
F155:   LF155   LDAA    L0005
F157:           LDAB    LD56D           ; 500 msec TCC DLY BEFORE LOCK ENAB AFTER OTHE
F15A:   LF15A   STAB    L0059

F15C:           LDAB    L0034           ; FILT Vss/1
F15E:           CMPB    LD56E           ; TCC WIL NOT UNLOCK IF Vss G.T.100 MPH
F161:           BCC     LF151           ; BR IF Vss GT THRESH
                                        ; ... else
F163:           ANDA    #$7F            ; CLR b7
F165:   LF165   ANDA    #$DF            ; CLR b5
F167:           ORAA    L0058
F169:   LF169   STAA    L0005

F16B:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
F16C:   LF16C   LDX     #$D5A4
F16F:           LDAA    L0021           ; COOLANT
F171:           CMPA    $10,X
F173:           BLS     LF1C5
                                        ; ... else
F175:           LDAA    $11,X

F177:           LDAB    L005A
F179:           CMPB    #$02
F17B:           BLS     LF17F
                                        ; ... else
F17D:           LDAA    $12,X
F17F:   LF17F   CMPA    L0049           ; CURRENT TPS VALUE
F181:           BHI     LF1C5
                                        ; ... else
F183:           LDAA    L0034           ; FILT Vss/1
F185:           CMPA    #$05            ; 5 MPH
F187:           BCS     LF1C5
                                        ; ... else
F189:           LDAA    L001C
F18B:           CMPA    $13,X
F18D:           BHI     LF1D9
                                        ; ... else
F18F:           CMPA    #$0028
F191:           BCS     LF1C5
                                        ; ... else
F193:           LDAB    #$0001
F195:           STAB    L005A
F197:           PSHX
F198:           LDX     #$0057
F19B:           JSR     LFBB9

F19E:           STD     L0057

F1A0:           LDAA    #$000E

F1A2:           JSR     LFBB9

F1A5:           STD     L0055

F1A7:           TSTA
F1A8:           BEQ     LF1AC
                                        ; ... else
F1AA:           LDAB    #255            ;

F1AC:   LF1AC   LDX     L0055
```

```
F1AE:           CPX     LD5A3               ; 255d, RPM/MPH HI RATIO FOR 1ST GR
F1B1:           PULX

F1B2:           BRA     LF1B9


F1B4:   LF1B4   INC     L005A
F1B7:           CMPB    0,X
F1B9:   LF1B9   BHI     LF1BF
                                            ; ... else
F1BB:           CMPB    4,X
F1BD:           BHI     LF1DF
                                            ; ... else
F1BF:   LF1BF   INX                         ;
F1C0:           CPX     #$D5A7              ;
F1C3:           BLS     LF1B4
                                            ; ... else
F1C5:   LF1C5   LDAA    LD5B8               ; 0.5 sec'S 1ST GEAR, DELAY BEFORE TURNING ON

F1C8:           LDAB    L005A
F1CA:           CMPB    #$02                ;
F1CC:           BLS     LF1D1               ; BR IF
                                            ; ... else
F1CE:           LDAA    LD5B9               ; 2.5 sec's 4 TH GEAR, DELAY BEFORE TURNING ON
F1D1:   LF1D1   STAA    L0059

F1D3:           LDAA    L0005
F1D5:           ANDA    #$7F

F1D7:           BRA     LF1DD


F1D9:   LF1D9   LDAA    L0005
F1DB:           ORAA    #$80

F1DD:   LF1DD   BRA     LF169


F1DF:   LF1DF   LDAA    L001C
F1E1:           CMPA    $08,X
F1E3:           BLS     LF1C5
                                            ; ... else
F1E5:           LDAA    $0C,X
F1E7:           LDAB    L0049               ; CURRENT TPS VALUE
F1E9:           MUL
F1EA:           ASLD
F1EB:           BCS     LF1F2
                                            ; ... else
F1ED:           ADDD    #128                ;
F1F0:           BCC     LF1F4               ; BR IF NO OVERFLOW
                                            ; ... else
F1F2:   LF1F2   LDAA    #255                ; FORCE MAX VALUE
F1F4:   LF1F4   PSHA

        ;=============================================
        ; TCC LD LIMIT vs MPH or RPM
        ; LOW GEARS
        ;
        ; Also used for shift light
        ;
        ; TABLE = %LD * 2.56
        ;=============================================
        ;---------------------------------------------
        ; UPPER LIMIT
        ;---------------------------------------------
F1F5:           LDX     #$D573
```

```
F1F8:           LDAB    L005A
F1FA:           CMPB    #$0002
F1FC:           BLS     LF201
                                        ; ... else
        ;---------------------------------------------
        ; TCC LD LIMIT vs MPH or RPM
        ; HI GEARS
        ;
        ; Also used for shift light
        ;
        ; TABLE = %LD * 2.56
        ;---------------------------------------------
        ;---------------------------------------------
        ; UPPER LIMIT
        ;---------------------------------------------
F1FE:           LDX     #$D58D          ;

F201:   LF201   LDAB    #11             ; LINE COUNT ?

F203:           LDAA    L0005           ;
F205:           BMI     LF208           ;
                                        ; ... else
F207:           ABX
F208:   LF208   LDAB    #$0028

F20A:           LDAA    L001C
F20C:           CMPA    #$C8
F20E:           BCS     LF212
                                        ; ... else
F210:           LDAA    #$00C8
F212:   LF212   JSR     LFB45           ; 2D LK UP

F215:           JSR     LF10A

F218:           PULB
F219:           CBA
F21A:           BCS     LF1C5
                                        ; ... else
F21C:           LDAA    L0059
F21E:           BEQ     LF1D9
                                        ; ... else
F220:           DECA

F221:           BRA     LF1D1

        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 7
        ;
        ;-------------------------------------------------
F223:           LDAA    L0070
F225:           BITA    #$10            ; b4
F227:           BEQ     LF22A           ; BR IF NOT b4
                                        ; ... else
F229:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
F22A:   LF22A   LDAA    L0036
F22C:           CMPA    LD5F4           ; 5 MPH, Vss FOR N BIAS =
F22F:           BCS     LF234
                                        ; ... else
F231:           CLR     L00CC

F234:   LF234   LDAB    L0002           ; FLAG WD
F236:           BITB    #$20            ; b5, ALDL MODE
```

```
F238:           BEQ     LF241               ; BR IF NOT b5
                                            ; ... else
F23A:           LDAB    LD5DB               ; ALDL (1000 RPM)
F23D:           STAB    L00CF

F23F:           BRA     LF26D


        *=========================================
        * IAC DESIERD IDLE SPD vs COOL
        * (Closed loop)
        *
        * TBL = RPM/12.5
        *=========================================
F241:   LF241   LDAA    L0021               ; COOLANT

F243:           LDX     #$D60E              ; IAC DESIERD IDLE SPD vs COOL
F246:           LDAB    #96
F248:           JSR     LFB45               ; 2d LOOK UP

F24B:           LDAB    L000F
F24D:           BITB    #$08                ; SET b3
F24F:           BEQ     LF254
                                            ; ... else
F251:           ADDA    LD5DA               ; 0 RPM,  DIFF ENG SPD FOR A/C ON (RPM/12.5)
F254:   LF254   STAA    L00CF

F256:           LDAA    L0047               ; Vbatt
F258:           CMPA    LD5DD               ; 0.2 VDC BATT DECR FOR INCR STEPS
F25B:           BCS     LF26D               ;
                                            ; ... else
F25D:           LDAA    LD5DC               ; 5 STEPS INCR FOR BATT VDC DECREASE
F260:           CMPA    L00C2               ;
F262:           BCS     LF269               ;
                                            ; ... else
F264:           STAA    L00C2               ;
F266:           CLR     L00C3               ;

F269:   LF269   ORAB    #$0040
F26B:           STAB    L000F

F26D:   LF26D   LDAA    L000F
F26F:           BITA    #$40
F271:           BNE     LF276
                                            ; ... else
F273:           JMP     LF311


F276:   LF276   LDAA    LD5E4               ; LOW Vss FILTER COEF

F279:           LDAB    L0036
F27B:           CMPB    LD5EC               ;  3.75 MPH FOR MIN COEF THRESH
F27E:           LDX     LD5E7               ; 0.4 Sec, DECAY DELAY FOR LOW VSS Sec/5
F281:           BCS     LF291
                                            ; ... else
F283:           LDAA    LD5E5               ; MED Vss FILTER COEF
F286:           CMPB    LD5ED               ; 20.0  MPH FOR MAX COEF THRESH
F289:           BCS     LF28E
                                            ; ... else
F28B:           LDAA    LD5E6               ;  HI Vss FILTER COEF
F28E:   LF28E   LDX     LD5E8               ; 1.0 Sec, DECAY DELAY FOR HI  VSS Sec/5

F291:   LF291   STAA    L0051
F293:           STX     L0055

F295:           LDAB    L0005
```

```
F297:           LDAA    L00C8
F299:           CMPA    L00C6
F29B:           BLS     LF2A2
                                        ; ... else
F29D:           CLRA
F29E:           ANDB    #$FD

F2A0:           BRA     LF2AA


F2A2:   LF2A2   BITB    #$02
F2A4:           BNE     LF2B0
                                        ; ... else
F2A6:           LDAA    L0055
F2A8:           ORAB    #$02
F2AA:   LF2AA   STAB    L0005

F2AC:           STAA    L00C9

F2AE:           BRA     LF2D2


F2B0:   LF2B0   TST     L00C9
F2B3:           BEQ     LF2BA
                                        ; ... else
F2B5:           DEC     L00C9
F2B8:           BRA     LF2D2


F2BA:   LF2BA   LDAB    L0036
F2BC:           CMPB    LD5EC           ;  3.75 MPH FOR MIN COEF THRESH
F2BF:           BCS     LF2C9
                                        ; ... else
F2C1:           CMPA    LD5EE           ; 10 STEPS,  MIN VAL AT HI Vss
F2C4:           BHI     LF2C9
                                        ; ... else
        ;
        ; FILTER STEPS
        ;
F2C6:           LDAA    LD5EE           ; 10 STEPS,  MIN VAL AT HI Vss
F2C9:   LF2C9   LDX     L00C6           ; OLD STEPS
F2CB:           LDAB    L0051           ;

F2CD:           JSR     LFB12           ; LAG FILTER

F2D0:           STD     L00C6           ; FILTERED STEPS


F2D2:   LF2D2   LDAA    L0008           ; STATUS

F2D4:           LDAB    L00C2           ;
F2D6:           BNE     LF2DC           ;
                                        ; ... else
F2D8:           ANDA    #$DF            ; CLEAR b5
F2DA:           STAA    L0008           ; STATUS

F2DC:   LF2DC   LDAB    LD5E9           ; DECAY DECAY COEF, LOW Vss
F2DF:           BITA    #$20            ; b5
F2E1:           BEQ     LF2E6           ; BR IF NOT b5
                                        ; ... else
F2E3:           LDAB    LD5EA           ; DECAY DECAY COEF, LOW Vss
                                        ;
F2E6:   LF2E6   CLRA                    ;
F2E7:           LDX     L00C2           ;
```

```
F2E9:           JSR     LFB12               ; LAG FILTER
                                            ;
F2EC:           STD     L00C2               ;
                                            ;
F2EE:           LDX     L00C4               ;
F2F0:           LDAB    LD5EB               ; FAST DECAY FILTER COEF
F2F3:           CLRA                        ;
F2F4:           JSR     LFB12               ; LAG FILTER

F2F7:           STD     L00C4               ; SAV3 FILERED RESULT

F2F9:           ORAA    L00C6
F2FB:           ORAA    L00C2
F2FD:           BNE     LF305
                                            ; ... else
F2FF:           LDAA    L000F
F301:           ANDA    #$BF                ; CLEAR b6
F303:           STAA    L000F

F305:   LF305   LDAB    L000F
F307:           BITB    #$20                ; b5
F309:           BNE     LF31A               ; BR IF NOT b5
                                            ; ... else
F30B:           LDAA    L00CD
F30D:           BEQ     LF31E
                                            ; ... else
F30F:           BRA     LF31A

        ;
        ; CHECK HEADS UP STATUS
        ;
F311:   LF311   LDAA    L0000               ; MODE WD
F313:           BITA    #$02                ; b1, HEADS UP ON LINE
F315:           BEQ     LF31A               ; BR IF NOT b1
                                            ; ... else
F317:           JSR     L5818               ; TO HEADS UP <-------<<<<

F31A:   LF31A   LDAA    L0001
F31C:           BMI     LF324               ; BR IF
                                            ; ... else
F31E:   LF31E   LDAA    LD5CA               ; 0d, Clsd Lp LARGE ERR EXTEND
F321:           STAA    L00CA

F323:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
F324:   LF324   LDAA    L00CA
F326:           BEQ     LF32C
                                            ; ... else
F328:           DECA
F329:           STAA    L00CA

F32B:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
F32C:   LF32C   LDAA    L000F
F32E:           BPL     LF33C
                                            ; ... else
F330:           LDAA    LD5C5               ; 500 RPM TO EXIT PWR STEER STALL
F333:           ADDA    LD5CD               ; 25 RPM, DEAD BAND
F336:           BCC     LF33E               ; BR IF NO OVERFLOW
                                            ; ... else
```

```
F338:           LDAA    #255                ; FORCE MAX VALUE

F33A:           BRA     LF33E


F33C:   LF33C   LDAA    L00CF
F33E:   LF33E   STAA    L00D0

F340:           LDX     #$D5C7
F343:           SUBA    L001F
F345:           BHI     LF350
                                            ; ... else
F347:           NEGA
F348:           CMPA    LD5CB               ; NEG ERR BK PT FOR LARGE GAIN WD
F34B:           BLS     LF358
                                            ; ... else
F34D:           INX
F34E:           BRA     LF358
 ;
F350:   LF350   INX
F351:           INX
F352:           CMPA    LD5CC               ; POS ERR BK PT FOR LARGE GAIN WD
F355:           BLS     LF358
                                            ; ... else
F357:           INX
F358:   LF358   LDAB    0,X
F35A:           STAB    L00CA
F35C:           LDAB    L0003
F35E:           ANDB    #$007F

F360:           LDAA    L00D0
F362:           SUBA    L001F
F364:           BCC     LF368
                                            ; ... else
F366:           ORAB    #$80                ; SET b7
F368:   LF368   STAB    L0003
F36A:           BPL     LF36D               ; BR IF ???
                                            ; ... else
F36C:           NEGA
F36D:   LF36D   CMPA    LD5CD               ; 25 RPM, DEAD BAND
F370:           BLS     LF37A
                                            ; ... else
F372:           LDAA    L0036
F374:           BEQ     LF37B
                                            ; ... else
F376:           LDAA    L000F
F378:           BPL     LF3CC

F37A:   LF37A   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
F37B:   LF37B   LDAA    L0049               ; CURRENT TPS VALUE
F37D:           CMPA    LD5C6               ; 1% TPS FOR CLOSED THROTLE
F380:           BHI     LF3CC               ; BR IF TPS GT THRESH
                                            ; ... else
F382:           LDAA    L000F
F384:           BITA    #$20                ; b5
F386:           BNE     LF3DE               ; BR IF b5,
                                            ; ... else
F388:           CLRA
F389:           LDAB    L0002               ; FLAG WD
F38B:           BITB    #$20                ; b5
F38D:           BNE     LF3E3               ; BR IF b5,
                                            ; ... else
```

```
F38F:           LDAA    L00CE
F391:           BEQ     LF3A5
                                            ; ... else
F393:           LDAA    L00DE
F395:           BITA    #$20
F397:           BEQ     LF3CB
                                            ; ... else
F399:           LDAB    L0021               ; COOLANT
F39B:           CMPB    LD5F3               ; ... Deg c, TEMP FOR COLD RPM LIMITING, TBL 2
F39E:           BCS     LF3CB
                                            ; ... else
F3A0:           LDAA    LD5E1               ; 1200 RPM FOR COLD RPM IN KICK DN MODE
F3A3:           BRA     LF3AE
 ;
F3A5:   LF3A5   LDAA    L000F
F3A7:           BITA    #$10
F3A9:           BEQ     LF3DE
                                            ; ... else
F3AB:           LDAA    LD5E2               ; 1100 RPM MAX HOT RPM FOR PK/NEUT
F3AE:   LF3AE   LDAB    L000F
F3B0:           BITB    #$08
F3B2:           BEQ     LF3BB
                                            ; ... else
F3B4:           ADDA    LD5E3               ;   25 RPM DIFF ADD FOR A/C ON
F3B7:           BCC     LF3BB
                                            ; ... else
F3B9:           LDAA    #$00FF
F3BB:   LF3BB   BITB    #$40
F3BD:           BNE     LF3CB
                                            ; ... else
F3BF:           LDAB    L00CC
F3C1:           CMPA    L001F
F3C3:           BCC     LF3CB
                                            ; ... else
F3C5:           INCB
F3C6:           BNE     LF3C9
                                            ; ... else
F3C8:           DECB
F3C9:   LF3C9   STAB    L00CC

F3CB:   LF3CB   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
F3CC:   LF3CC   LDAA    L00CD
F3CE:           LDAB    L0003
F3D0:           BPL     LF3D8
                                            ; ... else
F3D2:           TSTA
F3D3:           BEQ     LF3DB
                                            ; ... else
F3D5:   LF3D5   DECA

F3D6:           BRA     LF3DB
        ;-------------------------------------------------


        ;-------------------------------------------------
F3D8:   LF3D8   INCA
F3D9:           BEQ     LF3D5
                                            ; ... else
F3DB:   LF3DB   STAA    L00CD

F3DD:           RTS
        ;-------------------------------------------------
```

```
        ;------------------------------------------------
F3DE:   LF3DE   LDAA    L00CC
F3E0:           BEQ     LF3E5
                                        ; ... else
F3E2:           DECA
F3E3:   LF3E3   STAA    L00CC

F3E5:   LF3E5   LDAA    L000F
F3E7:           LDAB    L0003
F3E9:           BPL     LF412
                                        ; ... else
F3EB:           LDAB    L00CD
F3ED:           BEQ     LF3F4
                                        ; ... else
F3EF:           DECB
F3F0:           STAB    L00CD

F3F2:           BRA     LF43C


F3F4:   LF3F4   BITA    #$08
F3F6:           BEQ     LF40B
                                        ; ... else
F3F8:           LDAA    L00C1
F3FA:           LDAB    L00E4
F3FC:           CBA
F3FD:           BHI     LF405
                                        ; ... else
F3FF:           TSTB
F400:           BEQ     LF403
                                        ; ... else
F402:           DECB
F403:   LF403   STAB    L00E4
F405:   LF405   TSTA
F406:           BEQ     LF433
                                        ; ... else
F408:           DECA

F409:           BRA     LF41E


F40B:   LF40B   LDAA    L00E4
F40D:           BEQ     LF433
                                        ; ... else
F40F:           DECA

F410:           BRA     LF42A


F412:   LF412   BITA    #$08
F414:           BEQ     LF422
                                        ; ... else
F416:           LDAA    L00C1
F418:           CMPA    LD5DF           ; MOTOR R/S WITH A/C 255 STEPS
F41B:           BCC     LF42E
                                        ; ... else
F41D:           INCA
F41E:   LF41E   STAA    L00C1

F420:           BRA     LF43C
        ;------------------------------------------------


        ;------------------------------------------------
```

```
F422:   LF422   LDAA    L00E4
F424:           CMPA    LD5E0           ; MOTOR R/S WITH OUT A/C, 255 STEP
F427:           BCC     LF42E
                                        ; ... else
F429:           INCA
F42A:   LF42A   STAA    L00E4

F42C:           BRA     LF43C
        ;-------------------------------------------------


        ;-------------------------------------------------
F42E:   LF42E   DEC     L00FD           ; CURRENT DISPLAY IAC STEPS

F431:           BRA     LF436


F433:   LF433   INC     L00FD           ; CURRENT DISPLAY IAC STEPS

F436:   LF436   LDAA    L000F
F438:           ANDA    #$FC
F43A:           STAA    L000F


F43C:   LF43C   LDX     #$00E4

F43F:           LDAA    L000F

F441:           LDAB    LD50D           ; Mask for MALFFLG1,  1111 1100b
F444:           BITB    #$01
F446:           BEQ     LF44E
                                        ; ... else
F448:           LDAB    L00DE
F44A:           BITB    #$40
F44C:           BNE     LF47F
                                        ; ... else
F44E:   LF44E   LDAB    L00C1

F450:           SUBB    L00E4
F452:           BITA    #$08
F454:           BNE     LF46D
                                        ; ... else
F456:           LDX     #$00C1
F459:           BCS     LF479
                                        ; ... else
F45B:           CMPB    LD5D0           ;  5, MIN DIFF IAC STP'S w A/C
F45E:           BCS     LF479
                                        ; ... else
F460:           CMPB    LD5D1           ; 35, MAX DIFF IAC STP'S w A/C
F463:           BLS     LF496
                                        ; ... else
F465:   LF465   TST     0,X
F467:           BEQ     LF496
                                        ; ... else
F469:   LF469   DEC     0,X

F46B:           BRA     LF496


F46D:   LF46D   BCS     LF465
                                        ; ... else
F46F:           CMPB    LD5D0
F472:           BCS     LF465
                                        ; ... else
F474:           CMPB    LD5D1           ; 35, MAX DIFF IAC STP'S w A/C
F477:           BLS     LF496
```

```
F479:   LF479   INC     0,X
F47B:           BEQ     LF469
                                        ; ... else
F47D:           BRA     LF496


F47F:   LF47F   LDAB    LD5CF           ; 35, INIT MOTOR POSIT no A/C
F482:           BITA    #$08
F484:           BEQ     LF490

F486:           LDX     #$00C1
F489:           ADDB    LD5C1           ; 25 STEPS, INT NON VOL RAM FAIL FOR A/C ON ST
F48C:           BCC     LF490
                                        ; ... else
F48E:           LDAB    #$00FF
F490:   LF490   CMPB    0,X
F492:           BLS     LF496
                                        ; ... else
F494:           STAB    0,X

F496:   LF496   RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 8
        ;
        ;-------------------------------------------------
F497:           LDAB    L0070
F499:           BITB    #$10
F49B:           BNE     LF4B4
                                        ; ... else
        ;-------------------------------------------------
        ;  RETARD RECOVERY RATE vs RPM
        ;
        ;  Dissassemby of ARJU, LINES =  9
        ;  03-22-1994, 10:56:16
        ;
        ;  TBL = (%/MS) * (256/500)
        ;  TBL =  0.512  * %/MS
        ;-------------------------------------------------
F49D:           LDX     #$D196          ;  RETARD RECOVERY RATE vs RPM
F4A0:           JSR     LFDDA           ; SET RPM SACLE AND 2d LOOK UP

F4A3:           LDAB    L0077
F4A5:           MUL
F4A6:           ADCA    #$0000
F4A8:           NEGA
F4A9:           BNE     LF4AD
                                        ; ... else
F4AB:           LDAA    #$00FF
F4AD:   LF4AD   ADDA    L0077
F4AF:           BCS     LF4B2
                                        ; ... else
F4B1:           CLRA
F4B2:   LF4B2   STAA    L0077

F4B4:   LF4B4   LDAA    LD50F           ; Mask for MALFFLG3, 1111 1001
F4B7:           BPL     LF4DD
                                        ; ... else
F4B9:           LDAA    L0076
F4BB:           INCA
F4BC:           CMPA    #39
F4BE:           BCS     LF4DB
                                        ; ... else
F4C0:           LDD     LBC0A           ; ECU HARDWARE
F4C3:           STAA    L0051
```

```
F4C5:           LDAB    L000A               ;

F4C7:           SUBA    L0075               ;
F4C9:           CMPA    LD54C               ; PA count limit
F4CC:           BCS     LF4D2               ; BR IF COUNT LT THRESH
                                            ; ... else
F4CE:           ORAB    #$40                ; b6

F4D0:           BRA     LF4D4
        ;-------------------------------------------------


        ;-------------------------------------------------
F4D2:   LF4D2   ANDB    #$00BF
F4D4:   LF4D4   STAB    L000A

F4D6:           LDAA    L0051
F4D8:           STAA    L0075

F4DA:           CLRA

F4DB:   LF4DB   STAA    L0076

F4DD:   LF4DD   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE D
        ;
        ;-------------------------------------------------
F4DE:           LDAB    L0070

F4E0:           LDAA    L0009
F4E2:           ANDA    #$7F

F4E4:           ANDB    #$F0
F4E6:           BNE     LF4EA
                                            ; ... else
F4E8:           ORAA    #$80                ; SET B7
F4EA:   LF4EA   STAA    L0009

F4EC:           LDAA    L0881
F4EF:           BITA    #$40                ; b6
F4F1:           BNE     LF4F9               ; BR IF b6
                                            ; ... else
F4F3:           LDAA    L0014               ; CURRENT ERROR flag 3
F4F5:           ORAA    #$08                ; SET b3, ADU ERROR
F4F7:           STAA    L0014               ; CURRENT ERROR flag 3

F4F9:   LF4F9   LDAB    L000B

F4FB:           LDAA    L0002               ; FLAG WD
F4FD:           BITA    #$10                ; SET b4
F4FF:           BNE     LF50E               ;
                                            ; ... else
F501:           ANDB    #$7F                ; CLER b7
F503:           STAB    L000B

F505:           LDAA    L0007
F507:           ANDA    #$E3                ; CLEAR b2,3 & 4
F509:           STAA    L0007

F50B:           JMP     LF572
```

```
F50E:   LF50E   ORAB    #$80            ; SET b7
F510:           STAB    L000B

F512:           CLR     L0091           ; ERR LOG TIMER
F515:           LDAA    L0001
F517:           BMI     LF522
                                        ; ... else
F519:           LDAA    L0007
F51B:           ANDA    #$E3            ; CLR b2, 3 & 4
F51D:           STAA    L0007

F51F:           JMP     LF582


F522:   LF522   LDAB    L000E           ; A/F MODE Word Flag
F524:           BMI     LF534
                                        ; ... else
F526:   LF526   LDAA    L0007
F528:           ANDA    #$F7            ; CLR b3
F52A:           EORA    #$40            ; TOGGLE b6
F52C:           STAA    L0007

F52E:           BITA    #$40            ; b6
F530:           BNE     LF567           ; BR IF b6
                                        ; ... else
F532:           BRA     LF558


F534:   LF534   LDAA    L0007
F536:           BITA    #$08
F538:           BNE     LF54A
                                        ; ... else
F53A:           LDAB    L0009
F53C:           BPL     LF526           ; BR IF b7
                                        ; ... else
F53E:           ORAA    #$08            ; b3
F540:           STAA    L0007

F542:   LF542   LDAB    L000E           ; A/F MODE Word Flag
F544:           BITB    #$40            ; b6, RICH
F546:           BNE     LF55F           ; BR IF b6, RICH
                                        ; ... else
F548:           BRA     LF564


F54A:   LF54A   LDAA    L0009
F54C:           BPL     LF567
                                        ; ... else
F54E:           LDAA    L0007
F550:           BITA    #$10
F552:           BEQ     LF542
                                        ; ... else
F554:           ANDA    #$00EF
F556:           STAA    L0007
F558:   LF558   LDD     LBC3C           ; ECU HARDWARE
F55B:           BITB    #$08
F55D:           BEQ     LF564
                                        ; ... else
F55F:   LF55F   JSR     LFBF4

F562:           BRA     LF567


F564:   LF564   JSR     LFBFF
```

```
F567:   LF567   CLR     L000C
F56A:           LDAA    L0007
F56C:           ORAA    #$0004
F56E:           STAA    L0007

F570:           BRA     LF590


F572:   LF572   CLR     L000C
F575:           LDAA    L0014           ; CURRENT ERROR flag 3
F577:           ANDA    #$10            ; CLR ALL EXCEPT b4, EPROM ERROR
F579:           BEQ     LF57E           ; BR IF NOT b4
                                        ; ... else
F57B:           JMP     LF99D

F57E:   LF57E   LDAA    L0001
F580:           BMI     LF590
                                        ; ... else
F582:   LF582   CLRA                    ; CLEAR BUFFERS
F583:           STAA    L0086
F585:           STAA    L0090           ; ERR TIMER, ERR 24
F587:           STAA    L008D
F589:           STAA    L0087
F58B:           STAA    L0088           ; ERR 45 TIMER

F58D:           JMP     LF8D5
        ;-------------------------------------------------


        ;-------------------------------------------------
F590:   LF590   LDAA    L0007
F592:           BITA    #$02
F594:           BNE     LF5BA

F596:           LDAB    L00EC
F598:           CMPB    #$000A
F59A:           BCS     LF5BA
                                        ; ... else
F59C:           ORAA    #$02            ; SET b1,
F59E:           STAA    L0007

F5A0:           INC     L00E9           ; SUCCESSFUL START UP'S (w/o Err)
F5A3:           LDAA    L00E9           ; SUCCESSFUL START UP'S (w/o Err)
F5A5:           CMPA    LD510           ; NUM OF SUCCESSIVE PWR UPS W/NO ERRORS
F5A8:           BLS     LF5BA           ; BR IF SUCCESSFUL START UP'S (w/o Err) LT 50
                                        ; ... else
        ;
        ; CLEAR ERROR FLAGS
        ;
F5AA:           CLRA                    ; CLR BUFFERS
F5AB:           STAA    L00E0           ; ERROR flag 1
F5AD:           STAA    L00E1           ; ERROR flag 2
F5AF:           STAA    L00E2           ; ERROR flag 3
F5B1:           STAA    L00E9           ; SUCCESSFUL START UP'S (w/o Err)
F5B3:           STAA    L000C

F5B5:           JSR     LFD2C


F5B8:           STAA    L00EA
                                        ; ... else
F5BA:   LF5BA   LDAB    L0009
F5BC:           BITB    #$24
F5BE:           BNE     LF610

F5C0:           LDAA    L000B
```

```
F5C2:           BITA    #$40
F5C4:           BNE     LF5D4
                                        ; ... else
F5C6:           LDD     L00EB           ;
F5C8:           LSRD                    ;
F5C9:           CMPB    LD515           ; Time since run eable, (120 Sec)
F5CC:           BCS     LF610           ;
                                        ; ... else
F5CE:           LDAA    L000B
F5D0:           ORAA    #$40            ; b6
F5D2:           STAA    L000B

        ;-----------------------------------------------
        ; TEST o2 WINDOW
        ;-----------------------------------------------
F5D4:   LF5D4   LDAB    L003E           ; o2 (A/D),  mvdc = 0.2304 * A/D VAL
F5D6:           CMPB    LD517           ; 552 mvdc, o2 Sensor Hi limit
F5D9:           BHI     LF610           ; BR IF o2 VDC GT THRESH
                                        ; ... else
F5DB:           CMPB    LD516           ; 352 mvdc, o2 Sensor Lo limit
F5DE:           BLS     LF610           ; BR IF o2 VDC LT THRESH
                                        ; ... else
F5E0:           LDAB    L0089           ; o2 DIAG TIMER
F5E2:           CMPB    LD519           ; Time limit, (60 Sec)
F5E5:           BHI     LF615
                                        ; ... else
F5E7:           LDAA    L0070
F5E9:           ANDA    #$F0            ; MASK for HI NIBBLE
F5EB:           BNE     LF61B
                                        ; ... else
F5ED:           LDAA    L00EC
F5EF:           BITA    #$01            ; b0
F5F1:           BNE     LF61B           ; BR IF b0
                                        ; ... else
F5F3:           LDAB    L00E3           ; COOL, 1k pu
F5F5:           CMPB    LD51A           ; Coolant Min thresh, (65 c, 159f), 1k PU
F5F8:           BHI     LF61B           ; BR IF COOL VAL GT THRESH
                                        ; ... else
F5FA:           LDAA    L0049           ; CURRENT TPS VALUE
F5FC:           CMPA    LD518           ; TPS Min limit, (5%)
F5FF:           BHI     LF60B           ; BR IF TPS VAL GT THRES
                                        ; ... else
F601:           TST     L0089           ; o2 DIAG TIMER
F604:           BEQ     LF61B
                                        ; ... else
F606:           DEC     L0089           ; DECR  o2 DIAG TIMER

F609:           BRA     LF61B


F60B:   LF60B   INC     L0089           ; INCR o2 DIAG TIMER
F60E:           BRA     LF61B

F610:   LF610   CLR     L0089           ; CLEAR o2 DIAG TIMER

F613:           BRA     LF61B
        ;-----------------------------------------------


        ;-----------------------------------------------
F615:   LF615   LDAA    L0012           ; CURRENT ERR FLG 1
F617:           ORAA    #$40            ; SET b6
F619:           STAA    L0012           ; CURRENT ERR FLG 1

F61B:   LF61B   LDAB    L0009
F61D:           ANDB    #$00FB
```

```
F61F:           LDAA    L0048           ; MAP, (A/D, 0-255)
F621:           CMPA    LD520           ; 2.5vdc, TPS limit, ERR 21
F624:           BLS     LF639
                                        ; ... else
F626:           LDAA    L0086
F628:           CMPA    LD521           ; 8 Sec,Time limit, ERR 21
F62B:           BHI     LF63E
                                        ; ... else
F62D:           LDAA    L00FE           ; BARO PRESSURE
F62F:           CMPA    LD522           ; 51.7 Kpa  Baro limit, ERR 21
F632:           BCC     LF639           ; BR IF BARO GT THRESH
                                        ; ... else
F634:           INC     L0086

F637:           BRA     LF646


F639:   LF639   CLR     L0086

F63C:           BRA     LF646


F63E:   LF63E   LDAA    L0012           ; CURRENT ERR FLG 1
F640:           ORAA    #$08            ; SET b3
F642:           STAA    L0012           ; CURRENT ERR FLG 1

F644:           ORAB    #$04            ; SET b2

            ;
            ; ERR 24 DIAG TEST
            ;
F646:   LF646   STAB    L0009

F648:           LDAA    L0009

F64A:           LDAB    L00DE
F64C:           BITA    #$48            ; b3, b6
F64E:           BNE     LF67E
                                        ; ... else
F650:           LDAA    L0036
F652:           CMPA    LD525           ; 4 MPH Vss LIMIT, ERR 24
F655:           BHI     LF67E
                                        ; ... else
F657:           LDAA    L0090           ; ERR TIMER, ERR 24
F659:           CMPA    LD52A           ; 5 sec TIME LMT, ERR 24
F65C:           BHI     LF68E
                                        ; ... else
F65E:           LDAA    L002C           ; MAP, Kpa
F660:           CMPA    LD528           ; 25.1 Kpa MAP LIMIT, err 24
F663:           BCC     LF67E
                                        ; ... else
F665:           LDAA    L000F
F667:           BITA    #$10
F669:           BNE     LF67E
                                        ; ... else
F66B:           LDAA    L00E3           ; COOL, 1k pu
F66D:           CMPA    LD529           ; 65c,COOL LMT, 1k PU
F670:           BCC     LF67E
                                        ; ... else
F672:           LDAA    L001A           ; RPM/25
F674:           CMPA    LD526           ; 1400 RPM LO LIMIT, ERR 24
F677:           BLS     LF67E           ; BR IF RPM LT THRESH, ERR 24
                                        ; ... else
F679:           CMPA    LD527           ; 6000 RPM HI LIMIT, ERR 24
F67C:           BLS     LF685           ; BR IF RPM LT THRESH
```

```
                                                ; ... else
F67E:   LF67E   CLR     L0090                   ; ERR TIMER, ERR 24
F681:           ANDB    #$BF

F683:           BRA     LF696


F685:   LF685   LDAA    L0009                   ;
F687:           BPL     LF698                   ;
                                                ; ... else
F689:           INC     L0090                   ; ERR TIMER, ERR 24
                                                ;
F68C:           BRA     LF698                   ;
        ;-------------------------------------------------


        ;-------------------------------------------------
F68E:   LF68E   LDAA    L0012                   ; CURRENT ERR FLG 1
F690:           ORAA    #$01                    ; SET b0
F692:           STAA    L0012                   ; CURRENT ERR FLG 1

F694:           ORAB    #$40                    ; b6
F696:   LF696   STAB    L00DE                   ;

F698:   LF698   LDAB    L000A                   ;
                                                ;
F69A:           LDAA    LD50E                   ; Mask for MALFFLG2,  0011 1001
F69D:           BITA    #$20                    ; b5, code 32, EGR Failure
F69F:           BEQ     LF716                   ; BR IF NOT b5
                                                ; ... else
F6A1:           BITB    #$08                    ;
F6A3:           BNE     LF716                   ;
                                                ; ... else
F6A5:           LDAA    L000E                   ; A/F MODE Word Flag
F6A7:           BMI     LF6AC                   ;
                                                ; ... else
F6A9:   LF6A9   JMP     LF75B
        ;-------------------------------------------------


        ;-------------------------------------------------
F6AC:   LF6AC   LDAA    L0008                   ; STATUS
F6AE:           BITA    #$08                    ; b3, FUEL C/O
F6B0:           BNE     LF6A9                   ; BR IF b3,
                                                ; ... else
F6B2:           BITB    #$10                    ; b4
F6B4:           BNE     LF6BA                   ; BR IF b4
                                                ; ... else
F6B6:           LDAA    L008A                   ; EGR ERR DELAY TMR
F6B8:           BNE     LF6F2                   ; BR IF NZ
                                                ; ... else
F6BA:   LF6BA   LDAA    L0080                   ; Pct EGR
F6BC:           CMPA    LD530                   ; 98% EGR ON THRESH
F6BF:           BCS     LF6F2
                                                ; ... else

            ;
            ; CK VAC QUAL'S
            ;
F6C1:           LDAA    L0031                   ; VACUUM
F6C3:           CMPA    LD52C                   ; 39.9 Kpa. LO LD DISABLE
F6C6:           BLS     LF6F2                   ; BR IF VAC LT THRSH
                                                ; ... else
F6C8:           CMPA    LD52D                   ; 87.1 Kpa. HI LD DISABLE
F6CB:           BHI     LF6F2                   ; BR IF VAC GT THRSH
                                                ; ... else
```

```
F6CD:           LDAA    L0049           ; CURRENT TPS VALUE
F6CF:           CMPA    LD52E           ; 6.6% LO TPS LIMIT
F6D2:           BLS     LF74C           ; BR IF TPS LT THRESH
                                        ; ... else
F6D4:           CMPA    LD52F           ; 25%  HI TPS LIMIT
F6D7:           BHI     LF74C           ; BR IF TPS GT 25%
                                        ; ... else
F6D9:           SUBA    L004D           ; OLD TPS VALUE
F6DB:           BCC     LF6DE           ; BR IF ,,,
                                        ; ... else
F6DD:           NEGA
F6DE:   LF6DE   CMPA    LD533           ; 3.9% TPS, CHNG TO DISABLE TEST
F6E1:           BHI     LF74C           ; BR IF CHANGE GT THRESH
                                        ; ... else
F6E3:           LDAA    L0034           ; FILT Vss/1
F6E5:           CMPA    LD536           ; 45 MPH REQ TO ENABLE TEST, ERR 32
F6E8:           BCS     LF74C           ; BR IF Vss LT THRESH
                                        ; ... else
F6EA:           LDAA    L0006           ; STATUS
F6EC:           ASRA                    ;
F6ED:           BCC     LF6F4           ;
                                        ; ... else
F6EF:           ASLA
F6F0:           STAA    L0006           ; STATUS

F6F2:   LF6F2   BRA     LF74C

        ;
        ; CHECK INTIGRATOR R/L Vs WINDOW LIMIT
        ;
F6F4:   LF6F4   LDAA    L00A4           ; INTIGRATOR
                                        ;
F6F6:           BITB    #$04            ; b2
F6F8:           BNE     LF71B           ; BR IF b2
                                        ; ... else
F6FA:           SUBA    #128            ; MID POINT
F6FC:           BCC     LF6FF           ; BR IF INTIGRATOR GT 128, (Rich)
                                        ; ... else
F6FE:           NEGA                    ; INVERT
F6FF:   LF6FF   CMPA    LD2B7           ; CLSD LP INTAGRATOR WINDOW VAL, 4
F702:           BCC     LF74C           ; BR IF (INTIGRATOR-128) GT or LT 4
                                        ; ... else
F704:           ORAB    #$10            ; SET b4

F706:           LDAA    L008A           ; EGR ERR DELAY TMR
F708:           CMPA    LD531           ; 2.5 SEC'S EGR ERR DELAY TMR  <======= ????
F70B:           BHI     LF710           ; BR IF
                                        ; ... else
F70D:   LF70D   INCA                    ; INCR  EGR ERR DELAY TMR

F70E:           BRA     LF717


F710:   LF710   ORAB    #$04            ; SET b2

F712:           LDAA    L00A4           ; INTIGRATOR
F714:           STAA    L008B

F716:   LF716   CLRA                    ; CLR EGR ERR DELAY TMR
F717:   LF717   STAA    L008A           ; EGR ERR DELAY TMR

F719:           BRA     LF762


F71B:   LF71B   SUBA    L008B
F71D:           BCS     LF724
```

```
                                        ; ... else
F71F:           CMPA    LD535           ; INTIGRATOR CNT LESS FOR EGR FAULT
F722:           BCC     LF73A
                                        ; ... else
F724:   LF724   LDAA    L008A           ; EGR ERR DELAY TMR
F726:           CMPA    LD534           ; 2.8 Sec's TEST DURRATION
F729:           BCS     LF70D           ; BR if TIMER LT THRESH
                                        ; ... else
F72B:           LDAA    L008C           ; EGR FAIL CNT'R
F72D:           INCA                    ; INCT FAIL COUNT
F72E:           CMPA    LD532           ; 3 CNTS FAIL CNT'R THRESH
F731:           BCS     LF736
                                        ; ... else
F733:           ORAB    #$01            ; SET b0

F735:           DECA                    ; DECR FAIL CNT'R
F736:   LF736   STAA    L008C           ; EGR FAIL CNT'R

F738:           BRA     LF74C


F73A:   LF73A   LDAA    L008C           ; EGR FAIL CNT'R
F73C:           BEQ     LF73F
                                        ; ... else
F73E:           DECA
F73F:   LF73F   BNE     LF736
                                        ; ... else
F741:           ANDB    #$FE
F743:           STAA    L008C           ; EGR FAIL CNT'R

F745:           LDAA    LD005           ; Opt Word, 1000 1000
F748:           BPL     LF74C
                                        ; ... else
F74A:           ORAB    #$08            ; SET b3
F74C:   LF74C   BITB    #$10            ; b4
F74E:           BNE     LF75B           . BR IF b4
                                        ; ... else
F750:           LDAA    L0009
F752:           BPL     LF760
                                        ; ... else
F754:           LDAA    L008A           ; EGR ERR DELAY TMR
F756:           BEQ     LF760           ; BR IF Z
                                        ; ... else
F758:           DECA
F759:           BRA     LF75E

F75B:   LF75B   LDAA    LD52B           ; 30 Sec's DIAG CYCLE TIME
F75E:   LF75E   STAA    L008A           ; EGR ERR DELAY TMR

F760:   LF760   ANDB    #$EB            ; CLR b2 & b4
F762:   LF762   STAB    L000A           ;
                                        ;
F764:           BITB    #$01            ; b0
F766:           BEQ     LF76E           ; BR IF NOT b0
                                        ; ... else
F768:           LDAA    L0013           ;
F76A:           ORAA    #$20            ; b5
F76C:           STAA    L0013           ;

F76E:   LF76E   LDAB    L0009           ;
F770:           ANDB    #$BF            ; CLEAR b6
F772:           BITB    #$24            ; b5 & b2
F774:           BNE     LF796           ; BR IF b5 or b2
                                        ; ... else
F776:           LDAA    LD539           ; 67.9 Kpa, MAP limit. ERR 33
F779:           CMPA    L00FE           ; BARO PRESSURE
```

```
F77B:           BLS     LF77F
                                        ; ... else
F77D:           LDAA    L00FE           ; BARO PRESSURE
F77F:   LF77F   CMPA    L002D           ; MAP, (A/D, 0-255)
F781:           BCC     LF796
                                        ; ... else
F783:           LDAA    L008D           ; ERR 33 timer
F785:           CMPA    LD53A           ; 5 Sec's Time limit, ERR 33
F788:           BHI     LF79B           ;
                                        ; ... else
F78A:           LDAA    L0049           ; CURRENT TPS VALUE
F78C:           SUBA    LD538           ; 200 mvdc TPS limit, ERR 33
F78F:           BCC     LF796           ;
                                        ; ... else
F791:           INC     L008D           ; ERR 33 timer

F794:           BRA     LF7A3


F796:   LF796   CLR     L008D           ; ERR 33 timer

F799:           BRA     LF7A3


F79B:   LF79B   LDAA    L0013
F79D:           ORAA    #$10
F79F:           STAA    L0013

F7A1:           ORAB    #$0040
F7A3:   LF7A3   STAB    L0009

F7A5:           LDAA    L0002           ; FLAG WD
F7A7:           BITA    #$08            ; b3
F7A9:           BNE     LF7DA           ; BR IF b3
                                        ; ... else
F7AB:           LDAA    L0070
F7AD:           BITA    #$10
F7AF:           BNE     LF7DA
                                        ; ... else
F7B1:           LDAA    L0001
F7B3:           BITA    #$40
F7B5:           BEQ     LF7DA
F7B7:           CLRB

F7B8:           LDX     LBC06           ; ECU HARDWARE
F7BB:           LDAA    L001A           ; RPM/25
F7BD:           CMPA    LD546           ; 450 RPM, RPM limit, err 42
F7C0:           BLS     LF7D6
                                        ; ... else
F7C2:           CPX     L0092
F7C4:           BNE     LF7D6
                                        ; ... else
F7C6:           LDAB    L0094           ; EST FAULT CNT'R
F7C8:           CMPB    LD549           ; 4,  Num of EST faults for 42B
F7CB:           BHI     LF7D0           ; BR IF FAULTS GT 4
                                        ; ... else
F7CD:           INCB

F7CE:           BRA     LF7D6


F7D0:   LF7D0   LDAA    L00DE
F7D2:           ORAA    #$80            ; b7
F7D4:           STAA    L00DE

F7D6:   LF7D6   STAB    L0094           ; EST FAULT CNT'R
```

```
F7D8:           STX     L0092

F7DA:   LF7DA   LDAA    LD50F           ; Mask for MALFFLG3, 1111 1001
F7DD:           BPL     LF852
                                        ; ... else
F7DF:           LDX     L00EB
F7E1:           CPX     LD54A           ; 0 SEC Eng run time prior to test
F7E4:           BLS     LF852
                                        ; ... else
F7E6:           LDAB    L000A
F7E8:           BPL     LF7EE
                                        ; ... else
F7EA:           ANDB    #$00DF
F7EC:           BRA     LF850


F7EE:   LF7EE   BITB    #$20
F7F0:           BNE     LF852
                                        ; ... else
F7F2:           LDAA    L0002           ; FLAG WD
F7F4:           BITA    #$38
F7F6:           BNE     LF852
                                        ; ... else
F7F8:           BITB    #$02
F7FA:           BEQ     LF80E
                                        ; ... else
F7FC:           LDAA    L0001
F7FE:           BITA    #$20
F800:           BNE     LF80E
                                        ; ... else
F802:           LDAB    L000D
F804:           BITB    #$20
F806:           BNE     LF852
                                        ; ... else
F808:           ORAA    #$20            ; SET b5
F80A:           STAA    L0001
F80C:           BRA     LF852
 ;
F80E:   LF80E   LDAA    L000D
F810:           BITA    #$20
F812:           BEQ     LF852
                                        ; ... else
F814:           LDAA    L0009
F816:           BITA    #$48
F818:           BNE     LF852
                                        ; ... else
F81A:           LDAA    L0000
F81C:           ORAA    L00DE
F81E:           BMI     LF852
                                        ; ... else
F820:           LDAA    L000B
F822:           BITA    #$08
F824:           BNE     LF852
                                        ; ... else
F826:           LDAA    L001C
F828:           CMPA    LD551           ; 3200 RPM LIMIT, ERR 43
F82B:           BHI     LF852
                                        ; ... else
F82D:           LDAA    L0026           ; S/D MAP
F82F:           CMPA    LD552           ; 82 Kpa MAP LIMIT (TBL), ERR 43
F832:           BLS     LF852
                                        ; ... else
F834:           LDAA    L00E3           ; COOL, 1k pu
F836:           CMPA    LD54F           ;  84c, ERR 43 TEMP LIMIT
F839:           BCC     LF852           ; BR IF COOL GT THRESH
```

```
                                                ; ... else
F83B:           CMPA    LD550                   ; 105c, ERR 43 HOT TEMP LIMIT
F83E:           BLS     LF852                   ; BR IF COOL LT THRESH
                                                ; ... else
F840:           LDAA    L008F                   ; ERR 43 TEST TIMER
F842:           INCA                            ; INCR ERR 43 TEST TIMER
F843:           CMPA    LD54E                   ; TEST DURATION, ERR 43
F846:           BLS     LF853
                                                ; ... else
F848:           BITB    #$02
F84A:           BEQ     LF84E
                                                ; ... else
F84C:           ORAB    #$20
F84E:   LF84E   ORAB    #$02
F850:   LF850   STAB    L000A

F852:   LF852   CLRA
F853:   LF853   STAA    L008F                   ; ERR 43 TEST TIMER

F855:           LDAA    L000A
F857:           BITA    #$60                    ; b5 & b6
F859:           BEQ     LF861
                                                ; ... else
F85B:           LDAA    L0014                   ; CURRENT ERROR flag 3
F85D:           ORAA    #$80                    ; SET b7, KNOCK CNT'L FAILURE
F85F:           STAA    L0014                   ; CURRENT ERROR flag 3

F861:   LF861   LDAB    L000B
F863:           ANDB    #$FD

F865:           LDAA    LD556                   ; 148 mvdc o2 LOW LIMIT, ERR 44
F868:           CMPA    L0041
F86A:           BLS     LF884
                                                ; ... else
F86C:           LDAA    L0087
F86E:           CMPA    LD557                   ; 20 Sec TIME REQ, ERR 44
F871:           BHI     LF889
                                                ; ... else
F873:           LDAA    L000E                   ; A/F MODE Word Flag
F875:           BPL     LF884
                                                ; ... else
F877:           BITB    #$04
F879:           BNE     LF884
                                                ; ... else
F87B:           LDAA    L0009
F87D:           BPL     LF891
                                                ; ... else
F87F:           INC     L0087

F882:           BRA     LF891
        ;-------------------------------------------------


        ;-------------------------------------------------
F884:   LF884   CLR     L0087
F887:           BRA     LF891
 ;
F889:   LF889   LDAA    L0014                   ; CURRENT ERROR flag 3
F88B:           ORAA    #$40                    ; b6
F88D:           STAA    L0014                   ; CURRENT ERROR flag 3

F88F:           ORAB    #$02

F891:   LF891   LDAA    L0041
F893:           CMPA    LD558                   ; 751 mvdc, o2 SENSOR HI LIMIT
F896:           BLS     LF8BC
```

```
                                            ; ... else
F898:           LDAA    L0088               ; ERR 45 TIMER
F89A:           CMPA    LD559               ; 60 Sec's, TIME LIMIT, ERR 45
F89D:           BHI     LF8C1
                                            ; ... else
F89F:           LDAA    L000E               ; A/F MODE Word Flag
F8A1:           BPL     LF8BC
                                            ; ... else
F8A3:           BITB    #$04                ; b6,
F8A5:           BNE     LF8BC               ; BR IF b6
                                            ; ... else
F8A7:           LDAA    L0049               ; CURRENT TPS VALUE
F8A9:           CMPA    LD55A               ; 5%, TPS HI LIMIT, ERR 45
F8AC:           BHI     LF8B3
                                            ; ... else
F8AE:           CMPA    LD55B               ; 0%, TPS LO LIMIT, ERR 45
F8B1:           BCC     LF8BC               ; BR IF TPS GT THRESH, ERR 45
                                            ; ... else
F8B3:   LF8B3   LDAA    L0009
F8B5:           BPL     LF8C9
                                            ; ... else
F8B7:           INC     L0088               ; INCR ERR 45 TIMER

F8BA:           BRA     LF8C9
        ;-------------------------------------------------


        ;-------------------------------------------------
F8BC:   LF8BC   CLR     L0088               ; CLR ERR 45 TIMER
F8BF:           BRA     LF8C9


F8C1:   LF8C1   LDAA    L0014               ; CURRENT ERROR flag 3
F8C3:           ORAA    #$20                ; b5, o2 RICH
F8C5:           STAA    L0014               ; CURRENT ERROR flag 3

F8C7:           ORAB    #$02                ; SET b1
F8C9:   LF8C9   ANDB    #$FB                ; CLR b2
F8CB:           STAB    L000B

F8CD:           LDAA    L0009
F8CF:           ANDA    #$02                ; ALL EXCEPT CLR b1
F8D1:           ORAA    L0014               ; CURRENT ERROR flag 3
F8D3:           STAA    L0014               ; CURRENT ERROR flag 3

F8D5:   LF8D5   LDAA    L0007
F8D7:           BITA    #$04                ; b2
F8D9:           BEQ     LF8DE               ; BR IF NOT b2
                                            ; ... else
F8DB:           JMP     LF9A0
        ;-------------------------------------------------


        ;-------------------------------------------------
F8DE:   LF8DE   LDAA    L000B
F8E0:           BPL     LF8E5
F8E2:           JMP     LF9AB
 ;
F8E5:   LF8E5   LDAA    L0000
F8E7:           BITA    #$10
F8E9:           BEQ     LF8EE

F8EB:           JMP     LF9A0
        ;-------------------------------------------------
```

```
        ;-------------------------------------------------
F8EE:   LF8EE   JSR     LFCC9

F8F1:           LDAA    L0015
F8F3:           ORAA    L0016
F8F5:           ORAA    L0017
F8F7:           BNE     LF91A
                                        ; ... else
F8F9:           LDD     L0012           ; CURRENT ERR FLG 1
F8FB:           ANDA    L0051
F8FD:           ANDB    L0052
F8FF:           STD     L0015

F901:           LDAA    L0014           ; CURRENT ERROR flag 3
F903:           ANDA    L0053
F905:           STAA    L0017

F907:           LDAA    L0091           ; ERR LOG TIMER
F909:           BEQ     LF911
                                        ; ... else
F90B:           DEC     L0091           ; ERR LOG TIMER

F90E:           JMP     LF97C


F911:   LF911   LDAA    L000B
F913:           ANDA    #$FE
F915:           STAA    L000B

F917:           JMP     LF97C
        ;-------------------------------------------------


        ;-------------------------------------------------
F91A:   LF91A   LDX     #$0003
F91D:           CLRA
F91E:   LF91E   LDAB    $11,X
F920:           ANDB    $14,X
F922:           ANDB    $50,X
F924:           STAB    $14,X
F926:           BEQ     LF929
                                        ; ... else
F928:           INCA
F929:   LF929   DEX
F92A:           BNE     LF91E
                                        ; ... else
F92C:           INC     L0091           ; ERR LOG TIMER

F92F:           LDAB    L000B
F931:           TSTA
F932:           BNE     LF949
                                        ; ... else
F934:           LDAA    L0091           ; ERR LOG TIMER
F936:           BITB    #$01
F938:           BNE     LF93F
                                        ; ... else
F93A:           LDAB    LD511           ; ERROR LOG TIME CONSTANT 1,  1 Ssec

F93D:           BRA     LF942
        ;-------------------------------------------------


        ;-------------------------------------------------
F93F:   LF93F   LDAB    LD513           ; ERROR LOG TIME CONSTANT 3,  10 Ssec
F942:   LF942   CBA
F943:           BCS     LF97C
```

```
                                        ; ... else
F945:           STAB    L0091           ; ERR LOG TIMER

F947:           BRA     LF97C
        ;-------------------------------------------------


        ;-------------------------------------------------
F949:   LF949   LDAA    L0091           ; ERR LOG TIMER
F94B:           BITB    #$01            ; b0
F94D:           BNE     LF954           ; BR IF b1
                                        ; ... else
F94F:           LDAB    LD512           ; ERROR LOG TIME CONSTANT 3,  10 Ssec

F952:           BRA     LF957
        ;-------------------------------------------------


        ;-------------------------------------------------
F954:   LF954   LDAB    LD514           ; ERROR LOG TIME CONSTANT 4,  12 Ssec

F957:   LF957   CBA                     ; COMP B - A
F958:           BCS     LF97C           ; BR IF ....
                                        ; ... else
F95A:           LDAA    LD513           ; ERROR LOG TIME CONSTANT 3,  10 Ssec
F95D:           STAA    L0091           ; ERR LOG TIMER

F95F:           LDAA    L000B
F961:           ORAA    #$01            ; SET b0
F963:           STAA    L000B

F965:           CLRB
F966:           LDX     #$0003

F969:   LF969   LDAA    $0DF,X
F96B:           ORAA    $014,X
F96D:           STAA    $0DF,X

F96F:           STAB    $14,X
F971:           DEX
F972:           BNE     LF969
                                        ; ... else
F974:           CLR     L00E9           ; CLR SUCCESSFUL START UP'S (w/o Err)

F977:           JSR     LFD2C


F97A:           STAA    L00EA
F97C:   LF97C   LDAA    L0001
F97E:           BMI     LF988
                                        ; ... else
F980:           BITA    #$02
F982:           BNE     LF99D
                                        ; ... else
F984:           ORAA    #$0002

F986:           BRA     LF98A


F988:   LF988   ANDA    #$FD
F98A:   LF98A   STAA    L0001

F98C:           LDAA    L0002           ; FLAG WD
F98E:           BITA    #$08
F990:           BNE     LF99D
                                        ; ... else
```

```
F992:           LDAA    L000B
F994:           BITA    #$01
F996:           BNE     LF99D
                                                ; ... else
F998:   LF998   JSR     LFBFF

F99B:           BRA     LF9A0
        ;-------------------------------------------------


        ;-------------------------------------------------
F99D:   LF99D   JSR     LFBF4

F9A0:   LF9A0   CLRA
F9A1:           CLRB
F9A2:           STD     L0012               ; CURRENT ERR FLG 1

F9A4:           LDAA    L0014               ; CURRENT ERROR flag 3
F9A6:           ANDA    #$10                ; CLR ALL EXCEPT b4, PROM ERROR
F9A8:           STAA    L0014               ; CURRENT ERROR flag 3

F9AA:           RTS
        ;-------------------------------------------------


F9AB:   LF9AB   LDAA    L000C
F9AD:           BITA    #$40
F9AF:           BEQ     LFA03
                                                ; ... else
F9B1:           DEC     L0085
F9B4:           LDAB    L0085
F9B6:           BEQ     LF9BA
                                                ; ... else
F9B8:           BRA     LF9A0
        ;-------------------------------------------------


        ;-------------------------------------------------
F9BA:   LF9BA   BITA    #$10
F9BC:           BEQ     LF9C8
                                                ; ... else
F9BE:           ANDA    #$00EF
F9C0:           LDAB    #$0004
F9C2:   LF9C2   STAA    L000C
F9C4:   LF9C4   STAB    L0085

F9C6:           BRA     LF998
        ;-------------------------------------------------


        ;-------------------------------------------------
F9C8:   LF9C8   BITA    #$20
F9CA:           BNE     LF9D6
                                                ; ... else
F9CC:           LDAB    L0081
F9CE:           BNE     LF9DF
                                                ; ... else
F9D0:           LDAB    #$0008
F9D2:           ORAA    #$0020

F9D4:           BRA     LF9C2
        ;-------------------------------------------------


        ;-------------------------------------------------
F9D6:   LF9D6   LDAB    L0082
```

```
F9D8:           BEQ     LF9EC
                                        ; ... else
F9DA:           DECB
F9DB:           STAB    L0082

F9DD:           BRA     LF9E2
        ;-------------------------------------------------


        ;-------------------------------------------------
F9DF:   LF9DF   DECB
F9E0:           STAB    L0081
F9E2:   LF9E2   ORAA    #$0010
F9E4:           STAA    L000C

F9E6:           LDAA    #$0004
F9E8:           STAA    L0085

F9EA:           BRA     LF99D
        ;-------------------------------------------------

        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
F9EC:   LF9EC   LDAB    L0083
F9EE:           ANDA    #$03                ; 0000 0011
F9F0:           BEQ     LF9F9
                                        ; ... else
F9F2:           LDAA    L000C
F9F4:           DECA
F9F5:           ANDA    #$DF                ; 1101 1111

F9F7:           BRA     LFA30
        ;-------------------------------------------------

        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
F9F9:   LF9F9   LDAA    L0084
F9FB:   LF9FB   INCB
F9FC:           CMPB    #$001A
F9FE:           BCS     LFA05
                                        ; ... else
FA00:           CLRA

FA01:           BRA     LF9C2
        ;-------------------------------------------------

        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
FA03:   LFA03   LDAB    #$0002
FA05:   LFA05   CMPB    #$0002
FA07:           BNE     LFA11
                                        ; ... else
FA09:           LDAA    L00E0               ; ERROR flag 1
FA0B:           ANDA    LD50D               ; Mask for MALFFLG1,  1111 1100b
FA0E:           ROLA

FA0F:           BRA     LFA2A
        ;-------------------------------------------------
```

```
        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
FA11:   LFA11   CMPB    #$000A
FA13:           BNE     LFA1C
                                        ; ... else
FA15:           LDAA    L00E1           ; ERROR flag 2
FA17:           ANDA    LD50E           ; Mask for MALFFLG2,  0011 1001
                                        ;
                                        ; b7    error code 25   not used
                                        ; b6    error code 31   governor faiL
                                        ; b5    ERROR CODE 32   EGR FAILURE
                                        : b4    ERROR CODE 33   MAP SENSOR HIGH
                                        ;
                                        ; b3    ERROR CODE 34   MAP SENSOR LOW
                                        ; b2    error code 35   not used
                                        ; b1    error code 41   not used
                                        : b0    ERROR CODE 42   EST MONITOR ERROR
                                        ;----------------------------
FA1A:           BRA     LFA27


FA1C:   LFA1C   CMPB    #18
FA1E:           BNE     LFA27
                                        ; ... else
FA20:           LDAA    LD50F           ; Mask for MALFFLG3, 1111 1001
FA23:           ORAA    #$10            ; SET b4, PROM ERR
FA25:           ANDA    L00E2           ; ERROR flag 3
FA27:   LFA27   ROLA
FA28:           BCC     LF9FB
                                        ; ... else
FA2A:   LFA2A   STAA    L0084
FA2C:           STAB    L0083

FA2E:           LDAA    #$0042
FA30:   LFA30   STAA    L000C

FA32:           CLRA
FA33:   LFA33   INCA
FA34:           SUBB    #$05
FA36:           BHI     LFA33
                                        ; ... else
FA38:           ADDB    #$05
FA3A:           STAA    L0081
FA3C:           STAB    L0082

FA3E:           LDAB    #$001C
FA40:           JMP     LF9C4
 ;
FA43:   LFA43   LDAA    0,X
FA45:           CMPA    #$0003
FA47:           BNE     LFA4D
                                        ; ... else
FA49:           LDAA    L0049           ; CURRENT TPS VALUE

FA4B:           BRA     LFA57


FA4D:   LFA4D   LDAA    0,X
FA4F:           BNE     LFA55
                                        ; ... else
FA51:           LDAA    L0031           ; VACUUM

FA53:           BRA     LFA57
```

```
FA55:   LFA55   LDAA    L0026               ; S/D MAP
FA57:   LFA57   INX

FA58:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; CHECK OUT MAP SYSTEM AND FILTER OR USE DEFAULT
        ; (Error 33/34)
        ;-------------------------------------------------
FA59:   LFA59   LDAA    L002D               ; MAP, (A/D, 0-255)
                                            ;
FA5B:           LDAB    L0009               ;
FA5D:           BITB    #$48                ; b3, b6
FA5F:           BEQ     LFA89               ; INF NOT b3, b6 GO DO MAP FILTER
                                            ; ... else
FA61:           LDAB    L0001               ; STATUS
FA63:           BPL     LFA86               ; BR IF b7
                                            ; ... else
FA65:           LDAA    LD540               ; 2.34, MAP DEFAULT COEFF,
FA68:           LDAB    L0049               ; CURRENT TPS VALUE
FA6A:           MUL                         ; Mult A * B
FA6B:           ASLD                        ; N x 2
FA6C:           BCS     LFA86               ; BR OF OVERFLOW
                                            ; ... else
FA6E:           ASLD                        ; N x 2
FA6F:           BCS     LFA86               ; BR OF OVERFLOW
                                            ; ... else
FA71:           PSHA

        ;-----------------------------------------------
        ; MAP BIAS DEFAULT Vs. RPM
        ;
        ;-----------------------------------------------
FA72:           LDAA    L001C               ; RPM/25
FA74:           LSRA                        ; (RPM/25/2
FA75:           LDX     #$D541              ; MAP BIAS DEFAULT Vs. RPM TABLE
FA78:           LDAB    #16                 ;  ARG LOWER LIMIT
FA7A:           JSR     LFB37               ; 2d LK UP, WITH LOWER ARG LIMIT

FA7D:           PULB
FA7E:           ABA
FA7F:           BCS     LFA86               ; BR IF OVERFLOW
                                            ; ... else
FA81:           CMPA    LD53F               ; 90.8 Kpa DEFAULT MAP IF ERR BEFORE (NOT RUNN
FA84:           BLS     LFA89
                                            ; ... else
FA86:   LFA86   LDAA    LD53F               ; 90.8 Kpa DEFAULT MAP IF ERR BEFORE (NOT RUNN

FA89:   LFA89   LDX     #$D00E              ; NORMAL or TRANSIENT MAP FILTER COEF
FA8C:           LDAB    L0010               ; STATUS ??? 1 = TRANSIENT
FA8E:           ANDB    #$01                ; MASK FOR b0
FA90:           ABX                         ; ADJ INDEX
FA91:           LDAB    0,X                 ; NORMAL or TRANSIENT MAP FILTER COEF
FA93:           LDX     L0029               ; FILTERED MAP
FA95:           BSR     LFB12               ; LAG FILTER

FA97:           STD     L0029               ; SAVE FILTERED MAP


FA99:           ASLB
FA9A:           ADCA    #$00                ; ROUND
FA9C:           STAA    L002C               ; MAP, Kpa

FA9E:           LDAB    #$00BD
```

```
FAA0:           MUL
FAA1:           BCC     LFAA4
                                        ; ... else
FAA3:           INCA
FAA4:   LFAA4   ADDA    #21
FAA6:           STAA    L002E

FAA8:   LFAA8   LDD     #$011F
FAAB:           STD     LBC12           ; ECU HARDWARE

FAAE:           LDAA    L007A
FAB0:           BNE     LFAF5
                                        ; ... else
FAB2:           LDAA    #$08
FAB4:           STAA    L007A

FAB6:           LDAA    L0007
FAB8:           ASRA
FAB9:           BCC     LFAE0           ; TO DIAG DATA OUTPUT
                                        ; ... else
FABB:           LDX     #$FE39
FABE:           LDAB    #12
FAC0:           LDAA    L001A           ; RPM/25
FAC2:           BEQ     LFB0B
                                        ; ... else
FAC4:   LFAC4   ABX
FAC5:           SUBA    #16
FAC7:           BHI     LFAC4
                                        ; ... else
FAC9:           LDAB    L007B
FACB:           CMPB    #11
FACD:           BCC     LFAED
                                        ; ... else
FACF:           LSRB
FAD0:           BCC     LFAD6
                                        ; ... else
FAD2:           LDAA    L0022           ; COOLANT

FAD4:           BRA     LFB06

FAD6:   LFAD6   ASLB
FAD7:           ABX
FAD8:           LDX     0,X
FADA:           LDD     0,X
FADC:           STAB    L0022           ; COOLANT

FADE:           BRA     LFB06
        ;-------------------------------------------------


        ;=================================================
        ; ALDL DIAGNOSTIC DATA TABLE
        ;
        ;=================================================
FAE0:   LFAE0   LDAA    L0002           ; FLAG WD

FAE2:           LDAB    L007B           ; DIAG MSG LINE COUNTER
FAE4:           BEQ     LFB06           ; BR IF COUNT = 0
                                        ; ... else

FAE6:           LDX     #$D4E7          ; INDEX DIAG TABLE
FAE9:           CMPB    #20             ; 20 LINES
FAEB:           BCS     LFAFF           ; BR IF COUNTER LT 20
                                        ; ... else
FAED:   LFAED   CLRA                    ;
FAEE:           STAA    L007B           ; MSG LINE COUNT
```

```
FAF0:           DECA                        ; DECR COUNTER
FAF1:           STAA    L007C               ;

FAF3:           BRA     LFB11               ; EXIT VIA RTS


FAF5:   LFAF5   DEC     L007A
FAF8:           ASL     L007C               ;
FAFB:           BCC     LFB0B

FAFD:           BRA     LFB11               ; EXIT VIA RTS


FAFF:   LFAFF   DECB                        ; DECR DIAG MSG LINE COUNTER
FB00:           ASLB
FB01:           ABX                         ; ADJ ADDRESS INDEX
FB02:           LDX     0,X                 ; GET ADDRESS FROM TABLE
FB04:           LDAA    0,X                 ; GET VALUED FROM ADDRESS
FB06:   LFB06   STAA    L007C               ; CURRENT DIAG OUTPUT VALUE

FB08:           INC     L007B               ; INCR MSG LINE COUNT

FB0B:   LFB0B   LDD     #$0017              ;
FB0E:           STD     LBC12               ; ECU HARDWARE

FB11:   LFB11   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; LAG FILTER ROUTINE
        ;
        ;   ENTER WITH:
        ;       X REG   OLD VALUE
        ;       A REG   NEW VALUE
        ;       B REG   FILT COEF
        ;
        ;   EXIT WITH:
        ;       A REG      NEW FILTERED VALUE
        ;       B REG      OLD FILTERED VALUE
        ;
        ;-------------------------------------------------
FB12:   LFB12   STX     L0053               ; SAVE OLD VALUE
FB14:           STAB    L0051               ; SAVE FILT COEF
FB16:           BNE     LFB1C               ; BR IF COEF IS NZ
                                            ; ... else
FB18:           LDD     L0053               ; A = ?? b = ??

FB1A:           BRA     LFB35               ; EXIT VIA RTS


FB1C:   LFB1C   MUL                         ; MULT NEW VAL * FILT COEF
FB1D:           STD     L0055               ; QUOTIENT (temp)

FB1F:           LDAA    L0051               ; FILT COEF (Temp)
FB21:           NEGA

FB22:           LDAB    L0054
FB24:           MUL
FB25:           ADCA    #$00                ; ROUND
FB27:           STAA    L0052

FB29:           LDAA    L0051               ; FILT COEF (Temp)
FB2B:           NEGA
```

```
FB2C:           LDAB    L0053               ; A = ?? b = ??
FB2E:           MUL
FB2F:           ADDB    L0052
FB31:           ADCA    #$00                ; ROUND
FB33:           ADDD    L0055

FB35:   LFB35   RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ;  LFB36 2d LK UP, WITH UPPER ARG LIMIT
        ;  LFB37 2d LK UP, WITH LOWER ARG LIMIT
        ;-------------------------------------------------
FB36:   LFB36   CLRB                        ; CLEAR B Reg
FB37:   LFB37   CMPA    0,X                 ; COMP LK UP ARG WITH TABLE LIMIT
FB39:           BLS     LFB3D               ; BR IF LK UP ARG LT LIMIT
                                            ; .... else
FB3B:           LDAA    0,X                 ; FORCE LK UP ARG TO TABLE LIMIT VALUE
FB3D:   LFB3D   INX                         ; NEXT INDEX FOR TBL LOOK UP

FB3E:           BRA     LFB45               ; TO LOOK UP ROUTINE
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; 2d LOOK UP w/LINE COUNTER in HEADER
        ;
        ; ENTER WITH:
        ;           X REG POINTING TO 2d TABLE
        ;           A Reg = LOOK UP VAR
        ;           B Reg = LINE COUNT
        ; EXIT WITH:
        ;           A Reg.
        ;
        ;-------------------------------------------------
FB40:   LFB40   LDAB    0,X                 ; GET LINE COUNT
FB42:           INX                         ; INCR TABLE POINTER
                                            ;
FB43:           BRA     LFB4B               ; BR TO 2d LOOK UP
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; 2d LOOK UP FUNCTION
        ;
        ; MAY HAVE A LOOK UP ARGUMENT LIMITER IN B Reg.
        ;-------------------------------------------------
FB45:   LFB45   SBA                         ; A - B   (LIMIT  - Lk up Arg)
FB46:           BCC     LFB49               ; 2d LOOK UP ROUTINE IF B GT A
                                            ; ... else
FB48:           CLRA                        ; CLEAR A, ZERO OUT LK UP ARG
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; 2d LOOK UP FUNCTION
        ; WORKS W/ASCENDING or DECENDING TABLES
        ;
        ; ENTER WITH:
        ;           X REG POINTING TO 2d TABLE
        ;           A Reg = LOOK UP VAR
        ;
        ; EXIT WITH:
        ;           A Reg.
        ;           RESULT IN L0051 (TEMP BUFFER)
        ;
        ; Result is interp'ed in 1/16's
```

```
        ;
        ;-------------------------------------------------
FB49:   LFB49   LDAB    #16                 ;
FB4B:   LFB4B   MUL                         ; LOOK UP ARG x 16
FB4C:           PSHB                        ; SAVE QUOTIENT LSB

FB4D:           TAB                         ; MSB OF LK UP VAR x16  TO B REG
FB4E:           ABX                         ; ADJUST INDEX W/B Reg
FB4F:           LDD     0,X                 ; GET 2 TABLE VALUES
FB51:   LFB51   STAA    L0051               ; SAVE LOWER TABLE VALUE IN L0051 (1 OF 2)
FB53:           SBA                         ; SUB LOWER FROM UPPER TABLE VALUE
FB54:           PULB                        ; GET LSB OF LOOK UP ARG x 16
FB55:           BCS     LFB60               ; BR IF UPPER - LOWER = NEGITIVE..
                                            ; ... else

        ;
        ; TABLE IS DECENDING
        ;
FB57:           MUL                         ; MULT LINE DIFF x LOOKED UP VAL
FB58:           NEGA                        ; INVERT  MSB OF QUOTIENT
FB59:           ADDA    L0051               ; ADD INTO RESULT
FB5B:           ASLB                        ; RESULT x 2
FB5C:           SBCA    #$00                ; ROUND FOR INTEGER

FB5E:           BRA     LFB64               ; EXIT W/VAL IN L0051

        ;
        ; TABLE IS ASCENDING
        ;
FB60:   LFB60   NEGA                        ; INVERT
FB61:           MUL                         ; MULT LINE DIFF x LOOKED UP VAL
FB62:           ADCA    L0051               ; ADD INTO RESULT FOR FIANL VALUE

FB64:   LFB64   STAA    L0051

FB66:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ;  3d LK UP ROUTINE
        ;
        ;-------------------------------------------------
FB67:   LFB67   SUBA    0,X
FB69:           BCC     LFB6C

FB6B:           CLRA
FB6C:   LFB6C   SUBB    1,X
FB6E:           BCC     LFB71
                                            ; ... else
FB70:           CLRB
FB71:   LFB71   STAB    L0053

FB73:           LDAB    #16
FB75:           MUL
FB76:           PSHB
FB77:           LDAB    2,X
FB79:           PSHB
FB7A:           MUL
FB7B:           ABX
FB7C:           INX
FB7D:           INX
FB7E:           INX
FB7F:           PSHX
FB80:           LDAA    L0053
FB82:           BSR     LFB49               ; 2d LK UP W INTERP
```

```
FB84:           STAA    L0052

FB86:           LDAA    L0053
FB88:           PULX
FB89:           PULB
FB8A:           ABX
FB8B:           BSR     LFB49
FB8D:           TAB
FB8E:           LDAA    L0052

FB90:           BRA     LFB51
        ;-------------------------------------------------


        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
FB92:   LFB92   LDX     #$FFFF
FB95:           STX     L0051
FB97:           SUBD    L0053
FB99:           BCS     LFBA1
                                            ; ... else
FB9B:           BRA     LFBB6


FB9D:   LFB9D   SUBD    L0053
FB9F:           BCC     LFBA6
                                            ; ... else
FBA1:   LFBA1   ADDD    L0053
FBA3:           CLC

FBA4:           BRA     LFBA7
        ;-------------------------------------------------


        ;-------------------------------------------------
FBA6:   LFBA6   SEC
FBA7:   LFBA7   ROL     L0052
FBAA:           ROL     L0051
FBAD:           BCC     LFBB6
                                            ; ... else
FBAF:           ASLD
FBB0:           BCC     LFB9D
                                            ; ... else
FBB2:           SUBD    L0053

FBB4:           BRA     LFBA6


FBB6:   LFBB6   LDD     L0051

FBB8:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; FUEL OUT ROUTINE
        ;
        ;-------------------------------------------------
FBB9:   LFBB9   STAA    L0051
FBBB:           LDAB    1,X
FBBD:           MUL
FBBE:           ASLB
FBBF:           ADCA    #$00
FBC1:           STAA    L0052
```

```
FBC3:           LDAA    0,X
FBC5:           LDAB    L0051
FBC7:           MUL
FBC8:           STAA    L0051
FBCA:           CLRA
FBCB:           ADDD    L0051

FBCD:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; A/D ROUTINE
        ;
        ;-------------------------------------------------
FBCE:   LFBCE   PSHB
FBCF:           TAB
FBD0:           ORAB    L0071

FBD2:           LDAA    #$01
FBD4:           STD     LC002               ; A/D ADDRESS

FBD7:           PULB
FBD8:           TSTB
FBD9:           BNE     LFBF3
                                            ; ... else
FBDB:   LFBDB   LDX     #$0019
FBDE:   LFBDE   LDAA    LC000               ; A/D ADDRESS
FBE1:           BMI     LFBEF
                                            ; ... else
FBE3:           DEX
FBE4:           BNE     LFBDE
                                            ; ... else
FBE6:           LDAA    L0014               ; CURRENT ERROR flag 3
FBE8:           ORAA    #$01                ; SET b0, CAL PACK MISSING
FBEA:           STAA    L0014

FBEC:           CLRA

FBED:           BRA     LFBF3               ; EXIT VIA RTS


FBEF:   LFBEF   LDD     LC000               ; A/D ADDRESS
FBF2:           TBA

FBF3:   LFBF3   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
FBF4:   LFBF4   LDAA    #$00F7

FBF6:   LFBF6   LDX     LBC3C               ; ECU HARDWARE
FBF9:           STX     L0057
FBFB:           ANDA    L0058

FBFD:           BRA     LFC08
        ;-------------------------------------------------


        ;-------------------------------------------------
FBFF:   LFBFF   LDAA    #$0008

FC01:   LFC01   LDX     LBC3C               ; ECU HARDWARE
FC04:           STX     L0057
```

```
FC06:           ORAA    L0058
FC08:   LFC08   ANDA    #$FE
FC0A:           ORAA    #$22
FC0C:           STAA    L0058

FC0E:           LDAA    L0057
FC10:           ANDA    #$BB
FC12:           ORAA    #$B9
FC14:           STAA    L0057

FC16:           LDX     L0057
FC18:           STX     LBC3C               ; ECU HARDWARE

FC1B:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ;  ENTER WITH:
        ;            A =
        ;            B =
        ;
        ;  EXIT WITH:
        ;            A =
        ;
        ;-------------------------------------------------
FC1C:   LFC1C   BCC     LFC20               ; BR IF
                                            ; .... else
FC1E:           CLRA
                                            ; ... else
FC1F:           RTS


FC20:   LFC20   MUL
FC21:           ASLD                        ; N x 2
FC22:           BCS     LFC2A               ; BR IF OVERFLOW
                                            ; ... else
FC24:           TSTB                        ;
FC25:           BPL     LFC2C               ; EXIT & RETURN
                                            ; ... else
FC27:           INCA                        ;
FC28:           BNE     LFC2C               ; BR IF NZ
                                            ; ... else
FC2A:   LFC2A   LDAA    #255                ; FORCE MAX VALUE

FC2C:   LFC2C   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
FC2D:   LFC2D   CLRA
FC2E:           LDAB    L0000
FC30:           BITB    #$10
FC32:           BNE     LFC6F
                                            ; ... else
FC34:           LDAB    L002C               ; MAP, Kpa
FC36:           CMPB    L00FE               ; BARO PRESSURE
FC38:           BHI     LFC6F               ; BR IF MAP GT BARO
                                            ; ... else
FC3A:           LDAA    L0009
FC3C:           ANDA    #$000C
FC3E:           BEQ     LFC45
                                            ; ... else
FC40:           CMPB    LD53F               ; 90.8 Kpa DEFAULT MAP IF ERR BEFORE (NOT RUNN
FC43:           BCS     LFC83               ; BR IF MAP ....
                                            ; ... else
```

```
FC45:   LFC45   LDAA    L001A               ; RPM/25
FC47:           CMPA    LD01F               ; RPM limit for Pseudo Baro read in WOT
FC4A:           BHI     LFC7F               ; BR IF RPM GT THRESH
                                            ; ... else
FC4C:           LDAA    L0049               ; CURRENT TPS VALUE
FC4E:           CMPA    LD020               ; TPS Thresh for BARO calc
FC51:           BLS     LFC7F               ; BR IF TPS LT THRESH
                                            ; ... else
FC53:           SUBA    L004D               ;
FC55:           BCC     LFC58               ;
                                            ; ... else
FC57:           NEGA                        ;
FC58:   LFC58   CMPA    LD021               ; Max Diff TPS for Baro calc
FC5B:           BHI     LFC7F               ; GET BARO or DEFAULT
                                            ; ... else

        ;---------------------------------------------
        ; BARRO CORECTION vs TPS
        ;
        ; TBL = N * 2.7 * (256/40)
        ; TBL = N * 17.28
        ;
        ; Kpa/1K RPM
        ;---------------------------------------------
FC5D:           LDAA    L0049               ; CURRENT TPS VALUE
FC5F:           LDX     #$D1AD
FC62:           JSR     LFB40

FC65:           LDAB    L001C               ; RPM/25
FC67:           SUBB    #16                 ; 400 RPM
FC69:           BCC     LFC6C               ; BR IF NO UNDERFLOW
                                            ; ... else
FC6B:           CLRB                        ; ZERO B Reg
FC6C:   LFC6C   MUL
FC6D:           ADCA    #$00
FC6F:   LFC6F   ADDA    L002C               ; MAP, Kpa
FC71:           BCC     LFC75               ; BR IF NO OVERFLOW
                                            ; ... else
FC73:           LDAA    #255                ; FORCE MAX VALUE
FC75:   LFC75   LDAB    LD022               ; Baro A/D value filer, (coef 50%)
FC78:           LDX     L00FE               ; BARO PRESSURE
FC7A:           JSR     LFB12               ; LAG FILTER ROUTINE

FC7D:           BRA     LFC87
        ;---------------------------------------------


        ;---------------------------------------------
        ;  GET BARO PRESSURE or DEFAULT VALUE
        ;   ENTER:
        ;       A =
        ;       B =
        ;
        ;   EXIT WITH
        ;       A =
        ;
        ;---------------------------------------------
FC7F:   LFC7F   LDAA    L00FE               ; BARO PRESSURE
FC81:           BNE     LFC89               ; BR IF BARO IS NZ
                                            ; ... else
FC83:   LFC83   LDAA    LD53F               ; 90.8 Kpa DEFAULT MAP IF ERR BEFORE (NOT RUNN
FC86:           CLRB                        ;
FC87:   LFC87   STD     L00FE               ; BARO PRESSURE

FC89:   LFC89   RTS
        ;---------------------------------------------
```

```
        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
FC8A:   LFC8A   LDAA    #$001B              ;
                                            ;
FC8C:           LDAB    L00E3               ; COOL, 1k pu
FC8E:           CBA                         ; COMPARE A - D
FC8F:           BHI     LFC99               ; EXIT W/
                                            ; ... else
FC91:           LDAA    #$00FC              ;
FC93:           SBA                         ;
FC94:           BCC     LFC9D               ;
                                            ; ... else
FC96:           CLRA                        ;

FC97:           BRA     LFCB8


FC99:   LFC99   LDAA    #$00E0              ; ERROR flag 1

FC9B:           BRA     LFCB8
        ;-------------------------------------------------


        ;-------------------------------------------------
FC9D:   LFC9D   CMPA    #218
FC9F:           BLS     LFCAD
                                            ; ... else
FCA1:           PSHA
FCA2:           SUBA    #218
FCA4:           LDAB    #$0003
FCA6:           MUL
FCA7:           ADDB    #$0006
FCA9:           PULA
FCAA:           ABA

FCAB:           BRA     LFCB3
        ;-------------------------------------------------


        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
FCAD:   LFCAD   LDX     #$FE24              ; 2d TABLE
FCB0:           JSR     LFB49               ; 2d LK UP Routine

FCB3:   LFCB3   SUBA    #32
FCB5:           BCC     LFCB8
                                            ; ... else
FCB7:           CLRA

FCB8:   LFCB8   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
FCB9:   LFCB9   LDAB    LD28E               ; COOL FILT COEF
FCBC:           LDX     L0022

FCBE:           JSR     LFB12               ; LAG FILTER ROUTINE

FCC1:           STD     L0022
```

```
FCC3:           ASLB
FCC4:           ADCA    #$00
FCC6:           STAA    L0021               ; COOLANT

FCC8:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
FCC9:   LFCC9   LDD     LD50D               ; Mask for MALFFLG1,  1111 1100b
FCCC:           ORAA    #$80                ; SET b7, ERR 12, No ref's,
FCCE:           STD     L0051

FCD0:           LDAA    LD50F               ; Mask for MALFFLG3, 1111 1001
FCD3:           ORAA    #$10                ; SET b4
FCD5:           STAA    L0053

FCD7:           RTS
        ;-------------------------------------------------

FCD8:   LFCD8   LDAA    L0049               ; CURRENT TPS VALUE
FCDA:           STAA    L004A

FCDC:           LDAA    L0048               ; MAP, (A/D, 0-255)

FCDE:           LDAB    L0009
FCE0:           BITB    #$24
FCE2:           BEQ     LFCE7
                                            ; ... else
FCE4:           LDAA    LD524               ; DEFAULT TPS, 0.96 VDC
FCE7:   LFCE7   PSHA

FCE8:           LDAB    L004F               ; FILT LOW TPS VALUE
FCEA:           CBA
FCEB:           BHI     LFCF7
                                            ; ... else
        ;
        ; FILTER TPS VALUE
        ;
FCED:           LDX     L004F               ; OLD FILT LOW TPS VALUE
FCEF:           LDAB    LD28A               ; LOW TPS COEF
FCF2:           JSR     LFB12               ; LAG FILTER ROUTINE

FCF5:           STD     L004F               ; FILT LOW TPS VALUE

FCF7:   LFCF7   LDD     L004F               ; FILT LOW TPS VALUE
FCF9:           TSTB
FCFA:           BPL     LFCFD
                                            ; ... else
FCFC:           INCA
FCFD:   LFCFD   TAB
FCFE:           PULA
FCFF:           SBA
FD00:           BCC     LFD03
                                            ; ... else
FD02:           CLRA
FD03:   LFD03   LDAB    LD288
FD06:           MUL
FD07:           ASLD
FD08:           BCS     LFD13
                                            ; ... else
FD0A:           ASLD
FD0B:           BCS     LFD13
                                            ; ... else
FD0D:           TSTB
```

```
FD0E:           BPL     LFD15
                                        ; ... else
FD10:           INCA
FD11:           BNE     LFD15
                                        ; ... else
FD13:   LFD13   LDAA    #255
FD15:   LFD15   STAA    L0049           ; CURRENT TPS VALUE

FD17:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; PROCESS BARO VALUE
        ;
        ;-------------------------------------------------
FD18:   LFD18   LDAA    L00FE           ; BARO PRESSURE
FD1A:           SUBA    #$000D          ; 13d

FD1C:           LDAB    #$0097          ; 151
FD1E:           MUL                     ; (BAR - 13) * 151
FD1F:           ADCA    #$00            ; ROUND FOR INTEGER
FD21:           CMPA    #143            ; CK 143   ????
FD23:           BLS     LFD27           ; BR IF LT
                                        ; .... else
FD25:           LDAA    #143            ; FORCE VALUE TO 143
FD27:   LFD27   LDAB    #$0060          ; 96
FD29:           STAA    L0051           ;

FD2B:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
FD2C:   LFD2C   LDX     #$0003
FD2F:           CLRA

FD30:   LFD30   ADDA    $DF,X
FD32:           ASLA
FD33:           ADCA    #$00
FD35:           DEX
FD36:           BNE     LFD30
                                        ; ... else
FD38:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; USED AS A SHORT TIME DELAY
        ;
        ;-------------------------------------------------
FD39:   LFD39   RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
        ;
        ; GO READ COOLANT TEMP
        ;

FD3A:   LFD3A   LDAA    #$04            ; SET UP A/D
FD3C:           CLRB
FD3D:           JSR     LFBCE           ; A/D ROUTINE
```

```
FD40:           STAA    L0025           ; COOLANT, tbl 1

FD42:           PSHA

FD43:           LDAA    L000B
FD45:           BITA    #$20            ; b5
FD47:           BNE     LFD55           ; BR IF b5
                                        ; ... else
FD49:           LDD     L00EB
FD4B:           LSRD

FD4C:           LDAA    L000B
FD4E:           CMPB    LD51B           ; TIME SINCE RUN ENABLE, (1 Sec)
FD51:           BLS     LFD55           ; BR IF RUN TIME LT THRESH
                                        ; ... else
FD53:           ORAA    #$20            ; SET b5
FD55:   LFD55   ANDA    #$F7            ; CLR b3
FD57:           STAA    L000B

FD59:           PULA                    ; GET COOL VAL FM STACK
FD5A:           CMPA    LD51C           ; 135c, COOLANT HI LIMIT,  1k PU
FD5D:           BCC     LFD7C           ; BR IF COOL GT THRESH
                                        ; ... else
FD5F:           LDAB    L000B
FD61:           BITB    #$20            ; b5
FD63:           BNE     LFD6D           ; BR IF b5
                                        ; ... else
FD65:           LDAB    L00E0           ; ERROR flag 1
FD67:           BITB    #$20            ; b5, ERR 13, o2 SENSOR
FD69:           BEQ     LFD7C           ; BR IF NOT o2 ERR 13
                                        ; ... else
FD6B:           BRA     LFD73


FD6D:   LFD6D   LDAB    L0012           ; CURRENT ERR FLG 1
FD6F:           ORAB    #$20            ; SET b5
FD71:           STAB    L0012           ; CURRENT ERR FLG 1

FD73:   LFD73   LDAB    L000B
FD75:           ORAB    #$08            ; Set b3
FD77:           STAB    L000B

FD79:           LDAA    LD51F           ; 50c, Coolant default, ERR 14/15

FD7C:   LFD7C   PSHA

FD7D:           LDAA    L000B
FD7F:           BITA    #$10            ; b4
FD81:           BNE     LFD91
                                        ; ... else
FD83:           LDD     L00EB           ; TIMER
FD85:           LSRD                    ; N/2
FD86:           CMPB    LD51D           ; 0 Sec's TIME SINCE RUN ENABLE
FD89:           BLS     LFD91
                                        ; ... else
FD8B:           LDAA    L000B
FD8D:           ORAA    #$10            ; SET b4
FD8F:           STAA    L000B

FD91:   LFD91   PULA
FD92:           CMPA    LD51E           ; 35c, COOLANT LOW LIMIT
FD95:           BLS     LFDBA
                                        ; ... else
FD97:           LDAB    L000B
FD99:           BITB    #$10            ; b4
FD9B:           BNE     LFDAB
```

```
                                                ; ... else
FD9D:           LDAB    L00E0                   ; ERROR flag 1
FD9F:           BITB    #$10                    ; b4, ERR 15, Low Cool
FDA1:           BNE     LFDB1                   ; BR IF ERR 15, Low Cool
                                                ; ... else
FDA3:           LDAB    L000E                   ; A/F MODE Word Flag
FDA5:           BITB    #$01                    ; b0, CLR FLOOD FLAG
FDA7:           BEQ     LFDBA                   ; BR IF NOT b0
                                                ; ... else
FDA9:           BRA     LFDB1


FDAB:   LFDAB   LDAB    L0012                   ; CURRENT ERR FLG 1
FDAD:           ORAB    #$10                    ; SET b4, Low coolant sensor
FDAF:           STAB    L0012                   ; CURRENT ERR FLG 1

FDB1:   LFDB1   LDAB    L000B
FDB3:           ORAB    #$08                    ; SET b3
FDB5:           STAB    L000B

FDB7:           LDAA    LD51F                   ; 50c,Coolant default, ERR 14/15
FDBA:   LFDBA   STAA    L00E3                   ; COOL, 1k pu

FDBC:           RTS
        ;-------------------------------------------------


FDBD:   LFDBD   LDX     #$00ED

FDC0:           LDAA    #$0080
FDC2:   LFDC2   STAA    0,X

FDC4:           INX
FDC5:           CPX     #$00FC
FDC8:           BLS     LFDC2

FDCA:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
FDCB:   LFDCB   CLR     L006E                   ; PWR ENR SPK

FDCE:           LDAB    LD027                   ; 40 SEC'S, PWR ENR SPK TIME OUT
FDD1:           STAB    L006F                 ; PWR ENR SPK TIMER

FDD3:           LDAB    L000D
FDD5:           ANDB    #$FD                    ; CLR b1
FDD7:           STAB    L000D

FDD9:           RTS
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; ADJUST RPM FOR:
        ;       0 - 3200/400 or
        ;       400 - 800/200, & 800 - 2400/400, & 2400 - 4000/800
        ;-------------------------------------------------
FDDA:   LFDDA   LDAA    L001A                   ; RPM/25
FDDC:           CMPA    #32                     ; 800 RPM/25
FDDE:           BLS     LFDE7                   ; BR IF RPM LT 800 RPM
                                                ; ... else
FDE0:           LSRA                            ; n/2
FDE1:           ADDA    #16                     ; 400 RPM ?
FDE3:           BPL     LFDE7                   ; EXIT IF OVERFLOW
                                                ; ... else
```

```
FDE5:           LDAA    #128                ; 3200 RPM ?
                                            ;
FDE7:   LFDE7   JMP     LFB49               ; 2D LOOK UP W/INTERP
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 6
        ;
        ; CHECK HEADS UP STATUS
        ;-------------------------------------------------
FDEA:   LFDEA   LDAA    L0000               ; STATUS MODE WD
FDEC:           BITA    #$02                ; b1
FDEE:           BEQ     LFDF3               ; BR IF NOT b1
                                            ; ... else
FDF0:           JSR     L5809               ; GOTO HEADS UP  <---<<<

FDF3:   LFDF3   RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE 9
        ;
        ;-------------------------------------------------
FDF4:           LDAA    L00D2
FDF6:           BEQ     LFDFE
                                            ; ... else
FDF8:           LDAA    L0000
FDFA:           ORAA    #$04                ; toggle b2
FDFC:           STAA    L0000

FDFE:   LFDFE   LDX     #$0199
FE01:           STX     LBC0C               ; ECU HARDWARE

FE04:           LDX     #$0000

FE07:           BRA     LFE16
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE A
        ;
        ;-------------------------------------------------
FE09:   LFE09   LDX     #$0040

FE0C:           BRA     LFE16

        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE E
        ;
        ;-------------------------------------------------
FE0E:           LDX     #$0080              ; 128d

FE11:           BRA     LFE16               ; TO RTS C
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; REAL TIME SERVICE ROUTINE C
        ;
        ;-------------------------------------------------
```

```
FE13:           LDX     #$00C0              ; 32d

FE16:   LFE16   LDAB    #$0020
FE18:           STS     L0051
FE1A:           TXS

FE1B:   LFE1B   PULX
FE1C:           PSHX
FE1D:           PULX

FE1E:           DECB
FE1F:           BNE     LFE1B
                                            ; ... else
FE21:           LDS     L0051               ; SET USER STACK

FE23:           RTS
        ;-------------------------------------------------


        ;-------------------------------------------------
        ;
        ;
        ;-------------------------------------------------
        ORG  $FE24  ;
                    ;-------------------------------------
LFE24   FCB  0      ;
LFE25   FCB  33     ;
LFE26   FCB  54     ;
LFE27   FCB  68     ;
LFE28   FCB  81     ;
LFE29   FCB  92     ;
LFE2A   FCB  102    ;
LFE2B   FCB  112    ;
LFE2C   FCB  122    ;
LFE2D   FCB  133    ;
LFE2E   FCB  144    ;
LFE2F   FCB  157    ;
LFE30   FCB  171    ;
LFE31   FCB  192    ;
LFE32   FCB  243    ;
        ;-------------------------------------------------


        ;-------------------------------------------------
        ; 2d TBL Vs. AFR
        ;
        ;-------------------------------------------------
LFE33   FCB 16      ; 17 LINE COUNTER
                    ;
LFE34   FCB  255    ;
LFE35   FCB  255    ;
LFE36   FCB  255    ;
LFE37   FCB  255    ;
LFE38   FCB  255    ;
LFE39   FCB  205    ;
LFE3A   FCB  171    ;
LFE3B   FCB  146    ;
LFE3C   FCB  128    ;
LFE3D   FCB  114    ;
LFE3E   FCB  102    ;
LFE3F   FCB  93     ;
LFE40   FCB  85     ;
LFE41   FCB  79     ;
LFE42   FCB  73     ;
LFE43   FCB  68     ;
LFE44   FCB  64     ;
```

```
        ;-------------------------------------------------

        ;-------------------------------------------------
        ; TABLE OF 16 BIT VALUES
        ;
        ;-------------------------------------------------
        ORG  $FE45  ;
                    ;---------------------------------
LFE45   FCB $0028   ; 1                 ; SOME KIND OF MAP
LFE47   FCB $002A   ; 2
LFE49   FCB $0030   ; 3
LFE4B   FCB $0032   ; 4                 ; DIFF MAP
LFE4D   FCB $0034   ; 5                 ; MPH/1
LFE4F   FCB $0026   ; 6                 ; S/D MAP
LFE51   FCB $001C   ; 7                 ; RPM/25
LFE53   FCB $0012   ; 8                 ; CURRENT ERR FLG 1
LFE55   FCB $0014   ; 9                 ; CURRENT ERROR flag 3
LFE57   FCB $0006   ; 10                ; FLAG WD ?
LFE59   FCB $D002   ; 11                ; EPROM ID NUMBER
LFE5B   FCB $0070   ; 12                ; LOOP COUNTER ????

LFE5D   FCB $BC00   ; 13                ; ECU
LFE5F   FCB $BC02   ; 14                ; ECU
LFE63   FCB $BC06   ; 16                ; ECU
LFE65   FCB $BC0A   ; 17                ; ECU

LFE67   FCB $0020   ; 18
        ;-------------------------------------------------


        ;-------------------------------------------------
FE6A:           STX     L0324

FE6D:           LDX     LFEBC
FE70:           PSHX
FE71:           STX     L0018
FE73:           JSR     LFEFC

FE76:           CLRB
FE77:           CMPA    #40
FE79:           BLS     LFE98
                                        ; ... else
FE7B:           LDAB    L0023
FE7D:           BEQ     LFE99
                                        ; ... else
FE7F:           CMPA    #90
FE81:           BCS     LFE99
                                        ; ... else
FE83:           CLRB


FE84:           LDAA    L0881
FE87:           ANDA    #$30            ; 0011 0000
FE89:           CMPA    L001A           ; RPM/25
FE8B:           BEQ     LFE99
                                        ; ... else
FE8D:           STAA    L001A           ; RPM/25
FE8F:           STAB    L007A
FE91:           STAB    L0070
FE93:           STAB    L001B
FE95:           DECB
FE96:           STAB    L007B
FE98:   LFE98   INCB
FE99:   LFE99   STAB    L0023

FE9B:           JSR     LFAA8
```

```
FE9E:           LDD     L0018
FEA0:           EORB    #$04                ; toggle b2
FEA2:           STD     LBC3C               ; ECU HARDWARE

FEA5:           LDAA    L001A               ; RPM/25
FEA7:           BEQ     LFECF

FEA9:           LDAB    L0881
FEAC:           EORB    #$08                ; toggle b3
FEAE:           STAB    L0881

FEB1:           CMPA    #$20
FEB3:           BNE     LFF11
                                            ; ... else
FEB5:           CLRA
FEB6:           LDAB    #$00C5
FEB8:           STD     LBC14               ; ECU HARDWARE

FEBB:           LDX     #$0100
FEBE:           STX     L0055

FEC0:           LDX     #$00DD
FEC3:           JSR     LE403

FEC6:           STD     L001C               ; RPM/25

FEC8:           LDD     L0018
FECA:           ORAB    #$80                ; SET b7
FECC:           STD     LBC3C               ; ECU HARDWARE

FECF:   LFECF   LDD     L0018
FED1:           ANDA    #$F7
FED3:           ANDB    #$6F
FED5:           ORAB    #$08
FED7:           CLR     L0881
FEDA:           STD     LBC3C               ; ECU HARDWARE

FEDD:           CLR     L0801               ;  MCU2 I/O

FEE0:           LDX     #$BC0E              ; ECU HARDWARE
FEE3:           CLRA
FEE4:           CLRB
FEE5:           STD     0,X

FEE7:           BSR     LFF02
FEE9:           STD     6,X

FEEB:           LDAA    #$00F0
FEED:           BSR     LFF02
FEEF:           STD     8,X

FEF1:           BSR     LFF02
FEF3:           STD     $0A,X

FEF5:           BSR     LFF02
FEF7:           STD     $0C,X
FEF9:           JMP     LFFC3

FEFC:   LFEFC   LDAA    #$02                ; SET UP A/D
FEFE:   LFEFE   CLRB
FEFF:           JSR     LFBCE               ; A/D ROUTINE

FF02:   LFF02   RTS
        ;-----------------------------------------------
```

```
FF03:   LFF03   LDAA    #12
FF05:           BSR     LFEFE

FF07:           CMPA    #40
FF09:           BCS     LFF0F
                                        ; ... else
FF0B:           CMPA    #100
FF0D:           BCS     LFF10
                                        ; ... else
FF0F:   LFF0F   CLC

FF10:   LFF10   RTS

        ;-------------------------------------------------
FF11:   LFF11   LDAA    L0801           ; MCU2 I/O
FF14:           LSRB                    ; SHIFT MSB TO LSB
FF15:           LSRB
FF16:           LSRB
FF17:           LSRB
FF18:           ANDA    #$F0
FF1A:           ABA
FF1B:           STAA    L0020
FF1D:           LDAA    L0070

FF1F:           ANDA    #$0F            ; 0000 1111
FF21:           PSHA
FF22:           BSR     LFEFE

FF24:           LDX     #$0026
FF27:           PULB
FF28:           ABX
FF29:           STAA    0,X
FF2B:           TSTB
FF2C:           BNE     LFF7C
                                        ; ... else
FF2E:           LDAB    #$0080

FF30:           LDAA    L001B
FF32:           BNE     LFF36
                                        ; ... else
FF34:           LDAA    #$0003
FF36:   LFF36   DECA
FF37:           STAA    L001B
FF39:           BEQ     LFF43
                                        ; ... else
FF3B:           LDAB    #$001A
FF3D:           CMPA    #$02
FF3F:           BNE     LFF43
                                        ; ... else
FF41:           LDAB    #$00E6
FF43:   LFF43   LDX     #$F000
FF46:           ABX
FF47:           STX     LBC16           ; ECU HARDWARE

FF4A:           LDAA    L0801           ;  MCU2 I/O
FF4D:           ANDA    #$0F            ; CLR b4 th b7
FF4F:           BNE     LFF53
                                        ; ... else
FF51:           LDAA    #$0010
FF53:   LFF53   LSRA
FF54:           STX     LBC18           ; ECU HARDWARE
FF57:           STAA    L0801           ;  MCU2 I/O

FF5A:           LDD     L0018
FF5C:           ORAB    #$18            ; SET b4 & b3
```

```
FF5E:           BCC     LFF62
                                        ; ... else
FF60:           ANDB    #$F7            ; CLEAR b3
FF62:   LFF62   STD     LBC3C           ; ECU HARDWARE

FF65:           LDAA    L0021           ; COOLANT
FF67:           ASLA
FF68:           ADCA    #$00
FF6A:           STAA    L0021           ; COOLANT

FF6C:           ANDA    #$03            ; CLEAR b2 th b7

FF6E:           STX     LBC1A           ; ECU HARDWARE

FF71:           LDAB    L0881
FF74:           ANDB    #$FC            ; CLR b0 & b1
FF76:           ORAB    #$04            ; SET b2
FF78:           ABA
FF79:           STAA    L0881

FF7C:   LFF7C   LDX     LBC00           ; ECU HARDWARE
FF7F:           BSR     LFF02

FF81:           LDD     LBC00           ; ECU HARDWARE
FF84:           LSRD
FF85:           LSRD
FF86:           STD     L001E

FF88:           LDD     #$028F
FF8B:           CPX     #$028F
FF8E:           BHI     LFFA1
                                        ; ... else
FF90:           CPX     #$0148
FF93:           BCS     LFFAB
                                        ; ... else
FF95:           LSRD
FF96:           STD     LBC0E           ; ECU HARDWARE

FF99:           LDAB    #$0006
FF9B:           STD     L0053
FF9D:           CLRA
FF9E:           CLRB

FF9F:           BRA     LFFB8


;
FFA1:   LFFA1   STD     LBC0E           ; ECU HARDWARE
FFA4:           LSRD
FFA5:           STD     L0053
FFA7:           LDD     L001E

FFA9:           BRA     LFFB8


FFAB:   LFFAB   CLRA

FFAC:           LDAB    #$0042
FFAE:           STD     LBC0E           ; ECU HARDWARE

FFB1:           LDAB    #$00C5
FFB3:           STD     L0053

FFB5:           CLRB
FFB6:           SUBD    L001E
```

```
FFB8:   LFFB8   LDX     L0053
FFBA:           STX     LBC1C               ; ECU HARDWARE

FFBD:           JSR     LFD39               ; SHORT TIME DELAY

FFC0:           STD     LBC36               ; ECU HARDWARE

FFC3:   LFFC3   JSR     LFDFE

FFC6:           JMP     LE55B
        ;================================================

        ;================================================
FFC9:           FCB     $00
FFCA:           FCB     $00
FFCB:           FCB     $00
FFCC:           FCB     $00
FFCD:           FCB     $00
FFCE:           FCB     $00
FFCF:           FCB     $00
FFD0:           FCB     $00
FFD1:           FCB     $00
FFD2:           FCB     $00
FFD3:           FCB     $00
FFD4:           FCB     $00
FFD5:           FCB     $00
FFD6:           FCB     $00
FFD7:           FCB     $00
FFD8:           FCB     $00
FFD9:           FCB     $00
FFDA:           FCB     $00
FFDB:           FCB     $00
FFDC:           FCB     $00
FFDD:           FCB     $00
FFDE:           FCB     $00
FFDF:           FCB     $00
FFE0:           FCB     $00
FFE1:           FCB     $00
FFE2:           FCB     $00
FFE3:           FCB     $00
FFE4:           FCB     $00
FFE5:           FCB     $00
FFE6:           FCB     $00
FFE7:           FCB     $00
FFE8:           FCB     $00
FFE9:           FCB     $00
FFEA:           FCB     $00
FFEB:           FCB     $00
FFEC:           FCB     $00
FFED:           FCB     $00
FFEE:           FCB     $00
FFEF:           FCB     $00

        ;------------------------------------------------
        ; Vector table
        ;
        ;------------------------------------------------
FFF0:           FDB     $7EE0
FFF2:           FDB     $887E
FFF4:           FDB     $F31E

FFF6:           FDB     $E427           ; RTI
FFF8:           FDB     $E428           ;
FFFA:           FDB     $E427           ; RTI
FFFC:           FDB     $E243           ; RESET VECTOR
FFFE:           FDB     $E243           ; RESET VECTOR
```

```
;================================================
```