

```
entry:
  call void @!lvm.dbg.value(metadata %struct.INPUT_VAL* %input, metadata !37,
  ... metadata !DIExpression()), !dbg !148
  call void @!lvm.dbg.value(metadata %struct.RETURN_VAL* %ret_val, metadata
  ... !38, metadata !DIExpression()), !dbg !149
  %p_engine_speed = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 7, !dbg !150
  %tmp = load double, double* %p_engine_speed, align 8, !dbg !150, !tbody !151
  call void @!lvm.dbg.value(metadata double %tmp, metadata !80, metadata
  ... !DIExpression()), !dbg !156
  %p_throttle_angle = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 8, !dbg !157
  %tmp1 = load double, double* %p_throttle_angle, align 8, !dbg !157, !tbody
  ... !158
  call void @!lvm.dbg.value(metadata double %tmp1, metadata !81, metadata
  ... !DIExpression()), !dbg !159
  %p_throttle_flow = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 9, !dbg !160
  %tmp2 = load double, double* %p_throttle_flow, align 8, !dbg !160, !tbody !161
  call void @!lvm.dbg.value(metadata double %tmp2, metadata !82, metadata
  ... !DIExpression()), !dbg !162
  %p_airbyfuel_meas = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 10, !dbg !163
  %tmp3 = load double, double* %p_airbyfuel_meas, align 8, !dbg !163, !tbody
  ... !164
  call void @!lvm.dbg.value(metadata double %tmp3, metadata !83, metadata
  ... !DIExpression()), !dbg !165
  call void @!lvm.dbg.value(metadata double 1.000000e+00, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 0, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e+02, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 64, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 0.000000e+00, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 128, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e+00, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 192, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e+02, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 256, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double -3.660000e-01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 320, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 0x3FB6FC7A398201CD, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 384, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double -3.370000e-02, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 448, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e-04, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 512, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 4.132800e-01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 640, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e-02, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 704, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 4.000000e-02, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 768, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.400000e-01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 832, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.660000e+00, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 960, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.300000e-01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1024, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.470000e+01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1088, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.250000e+01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1152, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e-02, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1280, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 1.000000e+01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1344, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 2.000000e+01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1408, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double 5.000000e+01, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1472, 64)), !dbg !166
  call void @!lvm.dbg.value(metadata double -1.000000e+00, metadata !109,
  ... metadata !DIExpression(DW_OP_LLVM_fragment, 1536, 64)), !dbg !166
  %p_normal_mode_detect_1 = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 0, !dbg !167
  %tmp4 = load double, double* %p_normal_mode_detect_1, align 8, !dbg !167,
  ... !tbody !168
  call void @!lvm.dbg.value(metadata double %tmp4, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 320, 64)), !dbg !169
  %p_pi = getelementptr inbounds %struct.INPUT_VAL, %struct.INPUT_VAL* %input,
  ... i64 0, i32 1, !dbg !170
  %tmp5 = load double, double* %p_pi, align 8, !dbg !170, !tbody !171
  call void @!lvm.dbg.value(metadata double %tmp5, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 384, 64)), !dbg !169
  %p_air_estimate = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 2, !dbg !172
  %tmp6 = load double, double* %p_air_estimate, align 8, !dbg !172, !tbody !173
  call void @!lvm.dbg.value(metadata double %tmp6, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 448, 64)), !dbg !169
  %p_sensor_fail_detect = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 3, !dbg !174
  %tmp7 = load double, double* %p_sensor_fail_detect, align 8, !dbg !174,
  ... !tbody !175
  %conv = fptoui double %tmp7 to i8, !dbg !176
  call void @!lvm.dbg.value(metadata i8 %conv, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 512, 8)), !dbg !169
  %p_power_mode_detect = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 4, !dbg !177
  %tmp8 = load double, double* %p_power_mode_detect, align 8, !dbg !177, !tbody
  ... !178
  %conv1 = fptoui double %tmp8 to i8, !dbg !179
  call void @!lvm.dbg.value(metadata i8 %conv1, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 520, 8)), !dbg !169
  %p_normal_mode_detect_1_e = getelementptr inbounds %struct.INPUT_VAL,
  ... %struct.INPUT_VAL* %input, i64 0, i32 5, !dbg !180
  %tmp9 = load double, double* %p_normal_mode_detect_1_e, align 8, !dbg !180,
  ... !tbody !181
  %conv2 = fptoui double %tmp9 to i8, !dbg !182
  call void @!lvm.dbg.value(metadata i8 %conv2, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 528, 8)), !dbg !169
  %p_Sum3 = getelementptr inbounds %struct.INPUT_VAL, %struct.INPUT_VAL*
  ... %input, i64 0, i32 6, !dbg !183
  %tmp10 = load double, double* %p_Sum3, align 8, !dbg !183, !tbody !184
  call void @!lvm.dbg.value(metadata double %tmp10, metadata !39, metadata
  ... !DIExpression()), !dbg !185
  call void @!lvm.dbg.value(metadata double %tmp, metadata !100, metadata
  ... !DIExpression()), !dbg !186
  call void @!lvm.dbg.value(metadata double %tmp1, metadata !101, metadata
  ... !DIExpression()), !dbg !187
  call void @!lvm.dbg.value(metadata double %tmp2, metadata !102, metadata
  ... !DIExpression()), !dbg !188
  call void @!lvm.dbg.value(metadata double %tmp3, metadata !103, metadata
  ... !DIExpression()), !dbg !189
  %cmp = fcmp ole double %tmp3, -1.000000e+00, !dbg !190
  %tobool = icmp ne i8 %conv, 0, !dbg !191
  %tmp11 = or i1 %cmp, %tobool, !dbg !191
  %add = fadd double %tmp4, 1.000000e-02, !dbg !192
  call void @!lvm.dbg.value(metadata double %add, metadata !96, metadata
  ... !DIExpression()), !dbg !193
  %cmp9 = fcmp oge double %add, 1.000000e+01, !dbg !194
  %tobool14 = icmp ne i8 %conv2, 0, !dbg !195
  %tmp12 = or i1 %cmp9, %tobool14, !dbg !195
  call void @!lvm.dbg.value(metadata double %add, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 320, 64)), !dbg !169
  %tobool21 = icmp eq i8 %conv1, 0, !dbg !196
  % = select i1 %tobool21, double 7.000000e+01, double 5.000000e+01
  call void @!lvm.dbg.value(metadata double %, metadata !98, metadata
  ... !DIExpression()), !dbg !198
  %cmp24 = fcmp oge double %tmp1, %, !dbg !199
  %not251.demorgan = or i1 %cmp9, %tobool14, !dbg !200
  %not251 = xor i1 %,not251.demorgan, true, !dbg !200
  %not.or.cond = or i1 %tmp11, %,not251, !dbg !200
  %narrow = or i1 %cmp24, %not.or.cond, !dbg !200
  %brmerge.demorgan = and i1 %tmp12, %cmp24, !dbg !201
  call void @!lvm.dbg.value(metadata double 1.470000e+01, metadata !96,
  ... metadata !DIExpression()), !dbg !193
  %rtb_Sum_d.0 = select i1 %brmerge.demorgan, double 1.250000e+01, double
  ... 1.470000e+01, !dbg !201
  call void @!lvm.dbg.value(metadata double %rtb_Sum_d.0, metadata !96,
  ... metadata !DIExpression()), !dbg !193
  %mul = fmul double %tmp, %tmp6, !dbg !203
  %mul45 = fmul double %mul, 0x3FB6FC7A398201CD, !dbg !204
  %add46 = fadd double %mul45, -3.660000e-01, !dbg !205
  %mul49 = fmul double %tmp6, %tmp6, !dbg !206
  %mul50 = fmul double %tmp, %mul49, !dbg !207
  %mul51 = fmul double %mul50, 3.370000e-02, !dbg !208
  %add5252 = fsub double %add46, %mul51, !dbg !208
  %mul53 = fmul double %tmp, %tmp, !dbg !209
  %mul55 = fmul double %mul53, %tmp6, !dbg !210
  %mul56 = fmul double %mul55, 1.000000e-04, !dbg !211
  %add57 = fadd double %mul56, %add5252, !dbg !212
  call void @!lvm.dbg.value(metadata double %add57, metadata !97, metadata
  ... !DIExpression()), !dbg !213
  %sub = fsub double %tmp2, %add57, !dbg !214
  %mul58 = fmul double %sub, 4.132800e-01, !dbg !215
  %mul59 = fmul double %mul58, 1.000000e-02, !dbg !216
  %add61 = fadd double %tmp6, %mul59, !dbg !217
  call void @!lvm.dbg.value(metadata double %add61, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 448, 64)), !dbg !169
  br i1 %narrow, label %if.end91, label %if.else76, !dbg !218
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if.else76:
  %sub64 = fsub double %tmp3, %rtb_Sum_d.0, !dbg !219
  call void @!lvm.dbg.value(metadata double %sub64, metadata !98, metadata
  ... !DIExpression()), !dbg !198
  %mul65 = fmul double %sub64, 1.400000e-01, !dbg !222
  %mul66 = fmul double %mul65, 1.000000e-02, !dbg !223
  %add68 = fadd double %tmp5, %mul66, !dbg !224
  call void @!lvm.dbg.value(metadata double %add68, metadata !99, metadata
  ... !DIExpression()), !dbg !225
  %mul69 = fmul double %sub64, 4.000000e-02, !dbg !226
  %add70 = fadd double %mul69, %add68, !dbg !227
  call void @!lvm.dbg.value(metadata double %add70, metadata !39, metadata
  ... !DIExpression()), !dbg !185
  call void @!lvm.dbg.value(metadata double %add68, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 384, 64)), !dbg !169
  call void @!lvm.dbg.value(metadata double %add70, metadata !39, metadata
  ... !DIExpression()), !dbg !185
  call void @!lvm.dbg.value(metadata double %add68, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 384, 64)), !dbg !169
  %add78 = fadd double %add70, 1.000000e+00, !dbg !228
  call void @!lvm.dbg.value(metadata double %add78, metadata !98, metadata
  ... !DIExpression()), !dbg !198
  %cmp79 = fcmp ogt double %add78, 1.000000e+02, !dbg !231
  br i1 %cmp79, label %if.end91, label %if.else83, !dbg !231
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if.else83:
  %cmp84 = fcmp olt double %add78, 0.000000e+00, !dbg !234
  %add78 = select i1 %cmp84, double 0.000000e+00, double %add78, !dbg !236
  br label %if.end91, !dbg !236
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if.end91:
  %Z_AF_Controller_B.sroa.0.0250 = phi double [ %add70, %if.else76 ], [
  ... %add70, %if.else83 ], [ %tmp10, %entry ]
  %Z_AF_Controller_DW.sroa.6.0249 = phi double [ %add68, %if.else76 ], [
  ... %add68, %if.else83 ], [ %tmp5, %entry ]
  %rtb_Switch_n0.0 = phi double [ 1.000000e+02, %if.else76 ], [ %add78,
  ... %if.else83 ], [ 1.000000e+00, %entry ], !dbg !238
  call void @!lvm.dbg.value(metadata double %rtb_Switch_n0.0, metadata !90,
  ... metadata !DIExpression()), !dbg !240
  %div = fdiv double %add57, %rtb_Sum_d.0, !dbg !241
  %mul92 = fmul double %div, %rtb_Switch_n0.0, !dbg !242
  call void @!lvm.dbg.value(metadata double %mul92, metadata !98, metadata
  ... !DIExpression()), !dbg !198
  %cmp93 = fcmp ogt double %mul92, 1.660000e+00, !dbg !243
  %cmp98 = fcmp olt double %mul92, 1.300000e-01, !dbg !245
  %mul92 = select i1 %cmp98, double 1.300000e-01, double %mul92, !dbg !247
  %rtb_DataStoreRead.0 = select i1 %cmp93, double 1.660000e+00, double
  ... %mul92, !dbg !249
  call void @!lvm.dbg.value(metadata double %rtb_DataStoreRead.0, metadata
  ... !85, metadata !DIExpression()), !dbg !250
  call void @!lvm.dbg.value(metadata double %tmp3, metadata !86, metadata
  ... !DIExpression()), !dbg !251
  call void @!lvm.dbg.value(metadata double %tmp2, metadata !87, metadata
  ... !DIExpression()), !dbg !252
  call void @!lvm.dbg.value(metadata double %tmp1, metadata !88, metadata
  ... !DIExpression()), !dbg !253
  call void @!lvm.dbg.value(metadata double %tmp, metadata !89, metadata
  ... !DIExpression()), !dbg !254
  call void @!lvm.dbg.value(metadata double %rtb_Sum_d.0, metadata !84,
  ... metadata !DIExpression()), !dbg !255
  call void @!lvm.dbg.value(metadata double %rtb_DataStoreRead.0, metadata
  ... !77, metadata !DIExpression()), !dbg !256
  call void @!lvm.dbg.value(metadata double %rtb_Sum_d.0, metadata !79,
  ... metadata !DIExpression()), !dbg !257
  store double %add, double* %p_normal_mode_detect_1, align 8, !dbg !258,
  ... !tbody !168
  store double %Z_AF_Controller_DW.sroa.6.0249, double* %p_pi, align 8, !dbg
  ... !259, !tbody !171
  store double %add61, double* %p_air_estimate, align 8, !dbg !260, !tbody !173
  %conv112 = uitofp i1 %tmp11 to double, !dbg !261
  call void @!lvm.dbg.value(metadata double %conv112, metadata !94, metadata
  ... !DIExpression()), !dbg !262
  call void @!lvm.dbg.value(metadata double %conv112, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 512, 8)), !dbg !169
  store double %conv112, double* %p_sensor_fail_detect, align 8, !dbg !263,
  ... !tbody !175
  %conv115 = uitofp i1 %cmp24 to double, !dbg !264
  call void @!lvm.dbg.value(metadata double %conv115, metadata !95, metadata
  ... !DIExpression()), !dbg !265
  call void @!lvm.dbg.value(metadata double %conv115, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 520, 8)), !dbg !169
  store double %conv115, double* %p_power_mode_detect, align 8, !dbg !266,
  ... !tbody !178
  %conv118 = uitofp i1 %tmp12 to double, !dbg !267
  call void @!lvm.dbg.value(metadata double %conv118, metadata !92, metadata
  ... !DIExpression()), !dbg !268
  call void @!lvm.dbg.value(metadata double %conv118, metadata !45, metadata
  ... !DIExpression(DW_OP_LLVM_fragment, 528, 8)), !dbg !169
  store double %conv118, double* %p_normal_mode_detect_1_e, align 8, !dbg
  ... !269, !tbody !181
  store double %Z_AF_Controller_B.sroa.0.0250, double* %p_Sum3, align 8, !dbg
  ... !270, !tbody !184
  %c_commanded_fuel_gps = getelementptr inbounds %struct.RETURN_VAL,
  ... %struct.RETURN_VAL* %ret_val, i64 0, i32 0, !dbg !271
  store double %rtb_DataStoreRead.0, double* %c_commanded_fuel_gps, align 8,
  ... !dbg !272, !tbody !273
  %conv122 = uitofp i1 %narrow to double, !dbg !275
  call void @!lvm.dbg.value(metadata double %conv122, metadata !94, metadata
  ... !DIExpression()), !dbg !262
  call void @!lvm.dbg.value(metadata double %conv122, metadata !93, metadata
  ... !DIExpression()), !dbg !276
  call void @!lvm.dbg.value(metadata double %conv122, metadata !91, metadata
  ... !DIExpression()), !dbg !277
  call void @!lvm.dbg.value(metadata double %conv122, metadata !78, metadata
  ... !DIExpression()), !dbg !278
  %c_controller_mode = getelementptr inbounds %struct.RETURN_VAL,
  ... %struct.RETURN_VAL* %ret_val, i64 0, i32 1, !dbg !279
  store double %conv122, double* %c_controller_mode, align 8, !dbg !280, !tbody
  ... !281
  %c_airbyfuel_ref = getelementptr inbounds %struct.RETURN_VAL,
  ... %struct.RETURN_VAL* %ret_val, i64 0, i32 2, !dbg !282
  store double %rtb_Sum_d.0, double* %c_airbyfuel_ref, align 8, !dbg !283,
  ... !tbody !284
  ret i8* null, !dbg !285
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CFG for 'controller' function