

```
entry:
  %coef1 = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 75
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 75
  %0 = bitcast %struct.jpeg_d_coef_controller** %coef1 to
  ... %struct.my_coef_controller**
  %1 = load %struct.my_coef_controller*, %struct.my_coef_controller** %0,
  ... align 8, !tbaa !2
  %total_iMCU_rows = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 60
  %2 = load i32, i32* %total_iMCU_rows, align 8, !tbaa !10
  %sub = add i32 %2, -1
  %input_scan_number = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 34
  %output_scan_number = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 36
  %inputctl = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 77
  %input_iMCU_row = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 35
  %output_iMCU_row = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 37
  br label %while.cond
```

```
while.cond:
  %3 = load i32, i32* %input_scan_number, align 4, !tbaa !11
  %4 = load i32, i32* %output_scan_number, align 4, !tbaa !12
  %cmp = icmp slt i32 %3, %4
  br i1 %cmp, label %while.body, label %lor.rhs
```

```
lor.rhs:
  %cmp4 = icmp eq i32 %3, %4
  br i1 %cmp4, label %land.rhs, label %while.end
```

```
land.rhs:
  %5 = load i32, i32* %input_iMCU_row, align 8, !tbaa !13
  %6 = load i32, i32* %output_iMCU_row, align 8, !tbaa !14
  %cmp5 = icmp ugt i32 %5, %6
  br i1 %cmp5, label %while.end, label %while.body
```

```
while.body:
  %7 = load %struct.jpeg_input_controller*, %struct.jpeg_input_controller**
  ... %struct.jpeg_input_controller* %cinfo, i64 0, i32 15
  %consume_input = getelementptr inbounds %struct.jpeg_input_controller,
  ... %struct.jpeg_input_controller* %7, i64 0, i32 0
  %8 = load i32 (%struct.jpeg_decompress_struct*), i32
  ... (%struct.jpeg_decompress_struct**) %consume_input, align 8, !tbaa !16
  %call = tail call i32 @(%struct.jpeg_decompress_struct* nonnull %cinfo) #5
  %cmp6 = icmp eq i32 %call, 0
  br i1 %cmp6, label %cleanup.loopexit, label %while.cond
```

```
while.end:
  %num_components = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 8
  %9 = load i32, i32* %num_components, align 8, !tbaa !18
  %cmp7120 = icmp sgt i32 %9, 0
  br i1 %cmp7120, label %for.body.lr.ph, label %for.end43
```

```
for.body.lr.ph:
  %comp_info = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 43
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 43
  %10 = load %struct.jpeg_component_info*, %struct.jpeg_component_info**
  ... %struct.jpeg_component_info* %cinfo, i64 0, i32 1
  %comp_info, align 8, !tbaa !19
  %mem = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 1
  %11 = bitcast %struct.jpeg_decompress_struct* %cinfo to
  ... %struct.jpeg_common_struct*
  %idct = getelementptr inbounds %struct.jpeg_decompress_struct,
  ... %struct.jpeg_decompress_struct* %cinfo, i64 0, i32 80
  br label %for.body
```

```
for.body:
  %indvars.iv123 = phi i64 [ 0, %for.body.lr.ph ], [ %indvars.iv.next124,
  ... %for.inc40 ]
  %comp_ptr.0122 = phi %struct.jpeg_component_info* [ %10, %for.body.lr.ph ], [
  ... %indec.ptr42, %for.inc40 ]
  %component_needed = getelementptr inbounds %struct.jpeg_component_info,
  ... %struct.jpeg_component_info* %comp_ptr.0122, i64 0, i32 12
  %12 = load i32, i32* %component_needed, align 8, !tbaa !20
  %tobool = icmp eq i32 %12, 0
  br i1 %tobool, label %for.inc40, label %if.end9
```

```
if.end9:
  %13 = load %struct.jpeg_memory_mgr*, %struct.jpeg_memory_mgr** %mem, align
  ... 8, !tbaa !22
  %access_virt_barray = getelementptr inbounds %struct.jpeg_memory_mgr,
  ... %struct.jpeg_memory_mgr* %13, i64 0, i32 8
  %14 = load [64 x i16]** (%struct.jpeg_common_struct*,
  ... %struct.jpeg_common_struct*, %struct.jpeg_common_struct*,
  ... (%struct.jpeg_common_struct*, %struct.jpeg_common_struct*),
  ... %access_virt_barray, align 8, !tbaa !23
  %arrayidx = getelementptr inbounds %struct.my_coef_controller,
  ... %struct.my_coef_controller* %1, i64 0, i32 5, i64 %indvars.iv123
  %15 = load %struct.jpeg_virt_barray_control*, %struct.jpeg_virt_barray_control**
  ... %arrayidx, align 8, !tbaa !26
  %16 = load i32, i32* %output_iMCU_row, align 8, !tbaa !14
  %v_samp_factor = getelementptr inbounds %struct.jpeg_component_info,
  ... %struct.jpeg_component_info* %comp_ptr.0122, i64 0, i32 3
  %17 = load i32, i32* %v_samp_factor, align 4, !tbaa !27
  %mul = mul i32 %17, %16
  %call12 = tail call [64 x i16]** %14(%struct.jpeg_common_struct* %11,
  ... %struct.jpeg_virt_barray_control* %15, i32 %mul, i32 %17, i32 0) #5
  %18 = load i32, i32* %output_iMCU_row, align 8, !tbaa !14
  %cmp14 = icmp ult i32 %18, %sub
  br i1 %cmp14, label %if.then15, label %if.else
```

```
if.then15:
  %19 = load i32, i32* %v_samp_factor, align 4, !tbaa !27
  br label %if.end22
```

```
if.else:
  %height_in_blocks = getelementptr inbounds %struct.jpeg_component_info,
  ... %struct.jpeg_component_info* %comp_ptr.0122, i64 0, i32 8
  %20 = bitcast i32* %height_in_blocks to i64*
  %21 = load i64, i64* %20, align 8
  %22 = trunc i64 %21 to i32
  %23 = load i32, i32* %v_samp_factor, align 4, !tbaa !27
  %rem = urem i32 %22, %23
  %cmp18 = icmp eq i32 %rem, 0
  %rem = select i1 %cmp18, i32 %23, i32 %rem
  br label %if.end22
```

```
if.end22:
  %block_rows.0 = phi i32 [ %19, %if.then15 ], [ %rem, %if.else ]
  %24 = load %struct.jpeg_inverse_dct*, %struct.jpeg_inverse_dct** %idct,
  ... align 8, !tbaa !28
  %arrayidx25 = getelementptr inbounds %struct.jpeg_inverse_dct,
  ... %struct.jpeg_inverse_dct* %24, i64 0, i32 1, i64 %indvars.iv123
  %25 = load void (%struct.jpeg_decompress_struct*,
  ... %struct.jpeg_component_info*, i16*, i8**), void
  ... (%struct.jpeg_decompress_struct*, %struct.jpeg_component_info*, i16*, i8**),
  ... i32)** %arrayidx25, align 8, !tbaa !26
  %cmp29117 = icmp sgt i32 %block_rows.0, 0
  br i1 %cmp29117, label %for.body30.lr.ph, label %for.inc40
```

```
for.body30.lr.ph:
  %arrayidx27 = getelementptr inbounds i8**, i8*** %output_buf, i64
  ... %indvars.iv123
  %26 = load i8**, i8*** %arrayidx27, align 8, !tbaa !26
  %width_in_blocks = getelementptr inbounds %struct.jpeg_component_info,
  ... %struct.jpeg_component_info* %comp_ptr.0122, i64 0, i32 7
  %DCT_scaled_size36 = getelementptr inbounds %struct.jpeg_component_info,
  ... %struct.jpeg_component_info* %comp_ptr.0122, i64 0, i32 9
  %pre = load i32, i32* %width_in_blocks, align 4, !tbaa !29
  br label %for.body30
```

```
for.body30:
  %27 = phi i32 [ %pre, %for.body30.lr.ph ], [ %33, %for.end ]
  %indvars.iv = phi i64 [ 0, %for.body30.lr.ph ], [ %indvars.iv.next, %for.end
  ... ]
  %output_ptr.0119 = phi i8** [ %26, %for.body30.lr.ph ], [ %add_ptr, %for.end
  ... ]
  %cmp34113 = icmp eq i32 %27, 0
  br i1 %cmp34113, label %for.body30.for.end_crit_edge, label
  ... %for.body35.preheader
```

```
for.body35.preheader:
  %arrayidx32 = getelementptr inbounds [64 x i16]*, [64 x i16]** %call12, i64
  ... %indvars.iv
  %28 = load [64 x i16]*, [64 x i16]** %arrayidx32, align 8, !tbaa !26
  br label %for.body35
```

```
for.body35:
  %output_col.0116 = phi i32 [ %add, %for.body35 ], [ 0, %for.body35.preheader
  ... ]
  %buffer_ptr.0115 = phi [64 x i16]* [ %indec.ptr, %for.body35 ], [ %28,
  ... %for.body35.preheader ]
  %block_num.0114 = phi i32 [ %inc, %for.body35 ], [ 0, %for.body35.preheader ]
  %29 = getelementptr inbounds [64 x i16], [64 x i16]* %buffer_ptr.0115, i64
  ... 0, i64 0
  tail call void @25(%struct.jpeg_decompress_struct* %cinfo,
  ... %struct.jpeg_component_info* nonnull %comp_ptr.0122, i16* %29, i8**
  ... %output_ptr.0119, i32 %output_col.0116) #5
  %indec_ptr = getelementptr inbounds [64 x i16], [64 x i16]*
  ... %buffer_ptr.0115, i64 1
  %30 = load i32, i32* %DCT_scaled_size36, align 4, !tbaa !30
  %add = add i32 %30, %output_col.0116
  %inc = add i32 %block_num.0114, 1
  %31 = load i32, i32* %width_in_blocks, align 4, !tbaa !29
  %cmp34 = icmp ult i32 %inc, %31
  br i1 %cmp34, label %for.body35, label %for.end.loopexit
```

```
for.end.loopexit:
  %lessa129 = phi i32 [ %31, %for.body35 ],
  ... %lessa = phi i32 [ %30, %for.body35 ]
  br label %for.end
```

```
for.end:
  %32 = phi i32 [ %pre125, %for.body30.for.end_crit_edge ], [ %lessa,
  ... %for.end.loopexit ]
  %33 = phi i32 [ 0, %for.body30.for.end_crit_edge ], [ %lessa129,
  ... %for.end.loopexit ]
  %idx.ext = sext i32 %32 to i64
  %add_ptr = getelementptr inbounds i8**, i8*** %output_ptr.0119, i64 %idx.ext
  %indvars.iv.next = add nuw nsw i64 %indvars.iv, 1
  %lfr.wideiv = true i64 %indvars.iv.next to i32
  %exitcond = icmp eq i32 %lfr.wideiv, %block_rows.0
  br i1 %exitcond, label %for.inc40.loopexit, label %for.body30
```

```
for.inc40.loopexit:
  br label %for.inc40
```

```
for.inc40:
  %indvars.iv.next124 = add nuw nsw i64 %indvars.iv123, 1
  %indec_ptr42 = getelementptr inbounds %struct.jpeg_component_info,
  ... %struct.jpeg_component_info* %comp_ptr.0122, i64 1
  %34 = load i32, i32* %num_components, align 8, !tbaa !18
  %35 = sext i32 %34 to i64
  %cmp7 = icmp slt i64 %indvars.iv.next124, %35
  br i1 %cmp7, label %for.body, label %for.end43.loopexit
```

```
for.end43.loopexit:
  br label %for.end43
```

```
for.end43:
  %36 = load i32, i32* %output_iMCU_row, align 8, !tbaa !14
  %inc45 = add i32 %36, 1
  store i32 %inc45, i32* %output_iMCU_row, align 8, !tbaa !14
  %37 = load i32, i32* %total_iMCU_rows, align 8, !tbaa !10
  %cmp47 = icmp ult i32 %inc45, %37
  % = select i1 %cmp47, i32 3, i32 4
  br label %cleanup
```

```
cleanup:
  %retval.0 = phi i32 [ %, %for.end43 ], [ 0, %cleanup.loopexit ]
  ret i32 %retval.0
```

CFG for 'decompress_data' function