test family	test	intended behaviour			observed behaviour Cerberus (decreasing allocator)		
		PNVI-plain	PNVI-ae	PNVI-ae-udi	PNVI-plain	PNVI-ae	PNVI-ae-udi
1	provenance_basic_global_xy.c	UB			not triggered		
	provenance_basic_global_yx.c				UB (line 9)		
	provenance_basic_auto_xy.c				not triggered		
	provenance_basic_auto_yx.c				UB (line 9)		
2	**cheri_03_ii.c**	UB			UB (except with *permissive_pointer_arith* switch)		
3	**pointer_offset_from_ptr_subtraction_global_xy.c**	UB (pointer subtraction)			UB (pointer subtraction) Or UB (out-of-bound store with *permissive_pointer_arith* switch)		
	pointer_offset_from_ptr_subtraction_global_yx.c						
	pointer_offset_from_ptr_subtraction_auto_xy.c						
	pointer_offset_from_ptr_subtraction_auto_yx.c						
4	**provenance_equality_global_xy.c**	defined, nondet			not triggered		
	provenance_equality_global_yx.c				defined (ND except with *strict pointer equality* switch)		
	provenance_equality_auto_xy.c				not triggered		
	provenance_equality_auto_yx.c				defined (ND except with *strict pointer equality* switch)		
	provenance_equality_global_fn_xy.c				not triggered		
	provenance_equality_global_fn_yx.c				defined (ND except with *strict pointer equality* switch)		
5	**provenance_roundtrip_via_intptr_t.c**	defined			defined		
6	**provenance_basic_using_uintptr_t_global_xy.c**	defined			not triggered		
	provenance_basic_using_uintptr_t_global_yx.c				defined		
	provenance_basic_using_uintptr_t_auto_xy.c				not triggered		
	provenance_basic_using_uintptr_t_auto_yx.c				defined		
7	**pointer_offset_from_int_subtraction_global_xy.c**	defined			defined		
	pointer_offset_from_int_subtraction_global_yx.c				defined		
	pointer_offset_from_int_subtraction_auto_xy.c				defined		
	pointer_offset_from_int_subtraction_auto_yx.c				defined		
8	**pointer_offset_xor_global.c**	defined			defined		
	pointer_offset_xor_auto.c				defined		
9	provenance_tag_bits_via_uintptr_t_1.c	defined			defined		
10	**pointer_arith_algebraic_properties_2_global.c**	defined			defined		
11	**pointer_arith_algebraic_properties_3_global.c**	defined			defined		
12	**pointer_copy_memcpy.c**	defined			defined		
13	**pointer_copy_user_dataflow_direct_bytewise.c**	defined			defined		
13	**provenance_tag_bits_via_repr_byte_1.c**	defined			defined		
15	pointer_copy_user_ctrlflow_bytewise.c	defined			defined		
16	**pointer_copy_user_ctrlflow_bitwise.c**	defined			defined		
17	provenance_equality_uintptr_t_global_xy.c	defined			not triggered		
	provenance_equality_uintptr_t_global_yx.c				defined (true)		
	provenance_equality_uintptr_t_auto_xy.c				not triggered		
	provenance_equality_uintptr_t_auto_yx.c				defined (true)		
18	provenance_union_punning_2_global_xy.c	defined	UB (line 16, deref)	UB (line 16, store)	not triggered		
	provenance_union_punning_2_global_yx.c	defined	UB (line 16, deref)	UB (line 16, store)	defined	UB (line 16, deref)	UB (line 16, store)
	provenance_union_punning_2_auto_xy.c	defined	UB (line 16, deref)	UB (line 16, store)	not triggered		
	provenance_union_punning_2_auto_yx.c	defined	UB (line 16, deref)	UB (line 16, store)	defined	UB (line 16, deref)	UB (line 16, store)
19	**provenance_union_punning_3_global.c**	defined			defined		
20	provenance_via_io_percentp_global.c	**filesystem and scanf() are not currently supported by Cerberus**					
	provenance_via_io_bytewise_global.c						
	provenance_via_io_uintptr_t_global.c						
21	**pointer_from_integer_1pg.c**	UB (line 7)			UB in one exec (line 7)		
	pointer_from_integer_1ig.c	defined (j = 7)	UB (line 8)		defined (j = 7)	UB (line 8)	
	pointer_from_integer_1p.c	UB (line 6)			UB (line 6)		
	pointer_from_integer_1i.c	defined (j = 7)	UB (line 7)		defined (j = 7)	UB (line 7)	
	pointer_from_integer_1ie.c	defined (j = 7)			defined (j = 7)		
	pointer_from_integer_2.c	defined (j = 7)	UB (line 7)		defined (j = 7)	UB (line 7)	
	pointer_from_integer_2g.c	defined (j = 7)			defined (j = 7)		
	provenance_lost_escape_1.c	defined			defined		
22	**provenance_roundtrip_via_intptr_t_onepast.c**	UB (line 10)		defined	UB (line 10)		defined
23	**pointer_from_int_disambiguation_1.c**	defined (y = 11)			defined (y = 11)		
	pointer_from_int_disambiguation_1_xy.c				not triggered		
	pointer_from_int_disambiguation_2.c	UB (line 14)		defined	UB (line 14)		defined (x = 11)
	pointer_from_int_disambiguation_2_xy.c				not triggered		
	pointer_from_int_disambiguation_3.c	UB (line 15)		UB (line 15)	UB (line 15)		
	pointer_from_int_disambiguation_3_xy.c				not triggered		

(**bold** = tests mentioned in the document)

green = Cerberus behaviour matches intent
blue = Cerberus behaviour matches intent (witch *permissive_pointer_arith* switch)
grey = Cerberus' allocator doesn't trigger the interesting behaviour

test family	test	Observed behaviour (compilers), sound w.r.t PNVI-*? (relying on UB or ND?)								
		gcc-8.3			clang-7.0.1			icc-19		
		PNVI-plain	PNVI-ae	PNVI-ae-udi	PNVI-plain	PNVI-ae	PNVI-ae-udi	PNVI-plain	PNVI-ae	PNVI-ae-udi
1	provenance_basic_global_xy.c		y (n)			y (n)			y (y for O2+)	
	provenance_basic_global_yx.c		y (y for O2+)			not triggered			not triggered	
	provenance_basic_auto_xy.c		y (n)			y (n)			y (y for O2+)	
	provenance_basic_auto_yx.c		y (n)			y (n)			y (y for O2+)	
2	**cheri_03_ii.c**		y (n)			y (n)			y (n)	
3	**pointer_offset_from_ptr_subtraction_global_xy.c**								y (n)	
	pointer_offset_from_ptr_subtraction_global_yx.c								y (n)	
	pointer_offset_from_ptr_subtraction_auto_xy.c		y (n)			y (n)			y (y for O2+)	
	pointer_offset_from_ptr_subtraction_auto_yx.c								y (y for O2+)	
4	**provenance_equality_global_xy.c**		y (n)							
	provenance_equality_global_yx.c		y (y for O2+)							
	provenance_equality_auto_xy.c		y (y for O2+)			y (n)			y (n)	
	provenance_equality_auto_yx.c		y (n)							
	provenance_equality_global_fn_xy.c		y (n)							
	provenance_equality_global_fn_yx.c		y (y for O2+)							
5	**provenance_roundtrip_via_intptr_t.c**		y (n)			y (n)			y (n)	
6	**provenance_basic_using_uintptr_t_global_xy.c**		y (n)			y (n)			**n (y)**	
	provenance_basic_using_uintptr_t_global_yx.c		**n (y)**			not triggered			not triggered	
	provenance_basic_using_uintptr_t_auto_xy.c		y (n)			not triggered			**n (y)**	
	provenance_basic_using_uintptr_t_auto_yx.c		y (n)			y (n)			**n (y)**	
7	**pointer_offset_from_int_subtraction_global_xy.c**									
	pointer_offset_from_int_subtraction_global_yx.c									
	pointer_offset_from_int_subtraction_auto_xy.c		y (n)			y (n)			y (n)	
	pointer_offset_from_int_subtraction_auto_yx.c									
8	**pointer_offset_xor_global.c**									
	pointer_offset_xor_auto.c		y (n)			y (n)			y (n)	
9	provenance_tag_bits_via_uintptr_t_1.c		y (n)			y (n)			y (n)	
10	**pointer_arith_algebraic_properties_2_global.c**		y (n)			y (n)			y (n)	
11	**pointer_arith_algebraic_properties_3_global.c**		y (n)			y (n)			y (n)	
12	**pointer_copy_memcpy.c**		y (n)			y (n)			y (n)	
13	**pointer_copy_user_dataflow_direct_bytewise.c**		y (n)			y (n)			y (n)	
13	**provenance_tag_bits_via_repr_byte_1.c**		y (n)			y (n)			y (n)	
15	pointer_copy_user_ctrlflow_bytewise.c		y (n)			y (n)			y (n)	
16	**pointer_copy_user_ctrlflow_bitwise.c**		y (n)			y (n)			y (n)	
17	provenance_equality_uintptr_t_global_xy.c									
	provenance_equality_uintptr_t_global_yx.c									
	provenance_equality_uintptr_t_auto_xy.c		y (n)			y (n)			y (n)	
	provenance_equality_uintptr_t_auto_yx.c									
18	provenance_union_punning_2_global_xy.c		y (n)			y (n)		y (y for O2+)	**n (y)**	
	provenance_union_punning_2_global_yx.c	y (y for O2+)	**n (y)**			not triggered			not triggered	
	provenance_union_punning_2_auto_xy.c		y (n)			y (n)		y (y for O2+)	**n (y)**	
	provenance_union_punning_2_auto_yx.c		y (n)					y (y for O2+)	**n (y)**	
19	**provenance_union_punning_3_global.c**		y (n)			y (n)			y (n)	
20	provenance_via_io_percentp_global.c									
	provenance_via_io_bytewise_global.c		NO OPT			NO OPT			NO OPT	
	provenance_via_io_uintptr_t_global.c									
21	**pointer_from_integer_1pg.c**		y (y for O0+)			y (y for O2+)			y (y for O2+)	
	pointer_from_integer_1ig.c	**n (y)**	y (y for O2+)		**n (y)**	y (y for O2+)			**n (y for O2+)**	
	pointer_from_integer_1p.c									
	pointer_from_integer_1i.c									
	pointer_from_integer_1ie.c		**can't test with charon**							
	pointer_from_integer_2.c									
	pointer_from_integer_2g.c		y (n)			**n (y)**			y (n)	
	provenance_lost_escape_1.c		y (n)			y (n)			**n (y for O2+)**	
22	**provenance_roundtrip_via_intptr_t_onepast.c**		y (n)			y (n)			y (n)	
23	**pointer_from_int_disambiguation_1.c**		**n (y)**			not triggered			not triggered	
	pointer_from_int_disambiguation_1_xy.c		not triggered			y (n)			**n (y for O2+)**	
	pointer_from_int_disambiguation_2.c		y (n)			not triggered			not triggered	
	pointer_from_int_disambiguation_2_xy.c		not triggered			y (n)			y (n)	
	pointer_from_int_disambiguation_3.c		y (n)			not triggered			not triggered	
	pointer_from_int_disambiguation_3_xy.c		not triggered			y (n)			y (y for O2+)	

(**bold** = tests mentioned in the document)