

SUPPORTING INFORMATION ACCOMPANYING:

Capturing a Ghost. Synthesis and Structural Characterization of Pd(dba)[P(*o*-Tol)]₂

Brennen A. Harding,[§] Patrick R. Melvin,^{§,‡} William Dougherty, Jr.,[†] Scott Kassel,[†] and Felix E. Goodson^{*,§}

Contribution from the Department of Chemistry, West Chester University of Pennsylvania, West Chester, PA 19383; and the Department of Chemistry, Villanova University, Villanova, PA 19085.

Table 1S. Crystal data and structure refinement for **2**.

Table 2S. Atomic coordinates and equivalent isotropic atomic displacement parameters (\AA^2) for **2**.

Table 3S. Bond lengths and angles for **2**.

Table 4S. Anisotropic atomic displacement parameters for **2**.

Table 5S. Hydrogen atom coordinates and isotropic atomic displacement parameters for **2**.

Table 1S. Crystal data and structure refinement for **2**.

Identification code	good004
Empirical formula	C ₆₅ H ₇₁ O _{2.50} P ₂ Pd
Formula weight	1060.56
Temperature	110(2) K
Wavelength	0.71073 Å
Crystal system	Triclinic
Space group	P-1
Unit cell dimensions	a = 13.744(2) Å ⊂ = 85.671(3)°. b = 13.865(2) Å ⊕ = 84.162(3)°. c = 14.555(2) Å ⊙ = 83.843(3)°.
Volume	2737.6(7) Å ³
Z	2
Density (calculated)	1.287 Mg/m ³
Absorption coefficient	0.442 mm ⁻¹
F(000)	1114
Crystal size	0.20 x 0.08 x 0.08 mm ³
Theta range for data collection	1.50 to 33.18°.
Index ranges	-21 ≤ h ≤ 21, -21 ≤ k ≤ 21, -22 ≤ l ≤ 22
Reflections collected	80432
Independent reflections	20641 [R(int) = 0.0517]
Completeness to theta = 25.50°	100.0 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.9655 and 0.9168
Refinement method	Full-matrix least-squares on F ²
Data / restraints / parameters	20641 / 3 / 657
Goodness-of-fit on F ²	1.016
Final R indices [I > 2σ(I)]	R1 = 0.0421, wR2 = 0.0806
R indices (all data)	R1 = 0.0729, wR2 = 0.0913
Largest diff. peak and hole	0.823 and -0.499 e.Å ⁻³

Table 2S. Atomic coordinates ($\times 10^4$) and equivalent isotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for **2**. $U(\text{eq})$ is defined as one third of the trace of the orthogonalized U^{ij} tensor.

	x	y	z	$U(\text{eq})$
Pd(1)	7389(1)	7967(1)	6489(1)	14(1)
P(1)	7991(1)	7540(1)	4972(1)	15(1)
P(2)	8324(1)	7258(1)	7709(1)	17(1)
O(1)	7020(1)	10409(1)	6738(1)	21(1)
O(2)	5923(1)	5940(1)	2432(1)	39(1)
C(1)	5224(1)	8384(1)	5973(1)	16(1)
C(2)	4729(1)	7719(1)	6568(1)	18(1)
C(3)	3926(1)	7318(1)	6304(1)	21(1)
C(4)	3599(1)	7577(1)	5441(1)	22(1)
C(5)	4078(1)	8234(1)	4841(1)	20(1)
C(6)	4882(1)	8635(1)	5108(1)	18(1)
C(7)	6051(1)	8872(1)	6228(1)	16(1)
C(8)	6240(1)	8971(1)	7153(1)	17(1)
C(9)	6626(1)	9874(1)	7347(1)	17(1)
C(10)	6476(1)	10169(1)	8322(1)	19(1)
C(11)	6596(1)	11082(1)	8478(1)	21(1)
C(12)	6484(1)	11563(1)	9350(1)	22(1)
C(13)	6258(1)	11086(1)	10213(1)	24(1)
C(14)	6206(1)	11576(2)	11013(1)	27(1)
C(15)	6375(1)	12550(2)	10968(1)	27(1)
C(16)	6590(1)	13035(1)	10122(1)	28(1)
C(17)	6643(1)	12546(1)	9318(1)	26(1)
C(18)	7273(1)	8226(1)	4097(1)	15(1)
C(19)	7268(1)	9246(1)	3990(1)	17(1)
C(20)	6676(1)	9756(1)	3354(1)	21(1)
C(21)	6103(1)	9289(1)	2836(1)	24(1)
C(22)	6117(1)	8286(1)	2938(1)	22(1)
C(23)	6703(1)	7764(1)	3562(1)	18(1)
C(24)	7884(1)	9809(1)	4514(1)	21(1)
C(25)	9253(1)	7835(1)	4608(1)	17(1)
C(26)	9682(1)	7954(1)	3685(1)	21(1)

C(27)	10648(1)	8208(1)	3549(1)	24(1)
C(28)	11185(1)	8337(1)	4274(2)	28(1)
C(29)	10766(1)	8202(1)	5174(1)	26(1)
C(30)	9808(1)	7956(1)	5330(1)	20(1)
C(31)	9168(1)	7830(2)	2843(1)	26(1)
C(32)	8042(1)	6262(1)	4690(1)	16(1)
C(33)	7215(1)	5733(1)	4898(1)	18(1)
C(34)	7295(1)	4768(1)	4667(1)	22(1)
C(35)	8169(1)	4304(1)	4279(1)	26(1)
C(36)	8992(1)	4807(1)	4121(1)	24(1)
C(37)	8927(1)	5775(1)	4321(1)	19(1)
C(38)	6267(1)	6161(1)	5387(1)	22(1)
C(39)	9581(1)	7584(1)	7766(1)	21(1)
C(40)	9787(1)	8562(1)	7617(1)	24(1)
C(41)	10757(1)	8778(2)	7623(2)	31(1)
C(42)	11518(1)	8060(2)	7746(2)	38(1)
C(43)	11320(1)	7096(2)	7864(2)	36(1)
C(44)	10361(1)	6865(1)	7874(1)	26(1)
C(45)	9010(1)	9373(1)	7421(2)	29(1)
C(46)	7654(1)	7586(1)	8818(1)	22(1)
C(47)	6719(1)	7264(1)	9073(1)	25(1)
C(48)	6192(2)	7572(2)	9889(1)	35(1)
C(49)	6573(2)	8174(2)	10442(2)	42(1)
C(50)	7491(2)	8475(2)	10207(2)	39(1)
C(51)	8030(2)	8182(2)	9399(1)	29(1)
C(52)	6283(1)	6571(2)	8519(1)	28(1)
C(53)	8482(1)	5923(1)	7826(1)	19(1)
C(54)	8668(1)	5341(1)	8641(1)	25(1)
C(55)	8724(1)	4334(2)	8604(2)	32(1)
C(56)	8617(2)	3899(2)	7799(2)	33(1)
C(57)	8454(1)	4464(1)	6999(2)	27(1)
C(58)	8378(1)	5469(1)	7022(1)	20(1)
C(59)	8803(2)	5742(2)	9551(1)	36(1)
C(60)	7638(2)	5782(2)	1985(2)	43(1)
C(61)	6668(2)	5406(2)	1881(2)	46(1)
C(62)	4987(2)	5605(2)	2441(2)	52(1)

C(63)	4267(2)	6208(2)	3063(2)	56(1)
O(3)	9871(2)	9693(2)	9828(2)	38(1)
C(64)	10672(4)	8143(4)	10182(4)	49(1)
C(65)	10784(3)	9199(4)	10045(4)	46(1)
C(66)	9921(4)	10697(4)	9659(4)	46(1)
C(67)	8945(4)	11209(4)	9489(4)	49(1)

Table 3S. Bond lengths [\AA] and angles [$^\circ$] for **2**.

Pd(1)-C(7)	2.1628(16)
Pd(1)-C(8)	2.1890(16)
Pd(1)-P(1)	2.3723(6)
Pd(1)-P(2)	2.3876(5)
P(1)-C(25)	1.8407(16)
P(1)-C(18)	1.8371(17)
P(1)-C(32)	1.8421(17)
P(2)-C(53)	1.8374(18)
P(2)-C(46)	1.8383(18)
P(2)-C(39)	1.8441(17)
O(1)-C(9)	1.233(2)
O(2)-C(61)	1.414(3)
O(2)-C(62)	1.414(3)
C(1)-C(6)	1.395(2)
C(1)-C(2)	1.399(2)
C(1)-C(7)	1.475(2)
C(2)-C(3)	1.386(2)
C(3)-C(4)	1.386(3)
C(4)-C(5)	1.385(3)
C(5)-C(6)	1.390(2)
C(7)-C(8)	1.417(2)
C(8)-C(9)	1.469(2)
C(9)-C(10)	1.494(2)
C(10)-C(11)	1.334(2)
C(11)-C(12)	1.465(2)
C(12)-C(13)	1.397(3)
C(12)-C(17)	1.399(3)
C(13)-C(14)	1.384(3)
C(14)-C(15)	1.391(3)
C(15)-C(16)	1.378(3)
C(16)-C(17)	1.389(3)
C(18)-C(23)	1.392(2)
C(18)-C(19)	1.410(2)
C(19)-C(20)	1.397(2)

C(19)-C(24)	1.506(2)
C(20)-C(21)	1.382(3)
C(21)-C(22)	1.386(3)
C(22)-C(23)	1.387(2)
C(25)-C(30)	1.390(2)
C(25)-C(26)	1.417(2)
C(26)-C(27)	1.401(2)
C(26)-C(31)	1.504(3)
C(27)-C(28)	1.381(3)
C(28)-C(29)	1.385(3)
C(29)-C(30)	1.387(2)
C(32)-C(37)	1.404(2)
C(32)-C(33)	1.412(2)
C(33)-C(34)	1.395(2)
C(33)-C(38)	1.506(2)
C(34)-C(35)	1.387(2)
C(35)-C(36)	1.382(2)
C(36)-C(37)	1.387(2)
C(39)-C(44)	1.396(2)
C(39)-C(40)	1.411(3)
C(40)-C(41)	1.398(2)
C(40)-C(45)	1.498(3)
C(41)-C(42)	1.381(3)
C(42)-C(43)	1.387(3)
C(43)-C(44)	1.387(2)
C(46)-C(51)	1.396(3)
C(46)-C(47)	1.410(3)
C(47)-C(48)	1.398(3)
C(47)-C(52)	1.507(3)
C(48)-C(49)	1.379(3)
C(49)-C(50)	1.373(3)
C(50)-C(51)	1.388(3)
C(53)-C(58)	1.397(2)
C(53)-C(54)	1.413(3)
C(54)-C(55)	1.394(3)
C(54)-C(59)	1.510(3)

C(55)-C(56)	1.385(3)
C(56)-C(57)	1.377(3)
C(57)-C(58)	1.389(3)
C(60)-C(61)	1.508(3)
C(62)-C(63)	1.501(4)
O(3)-C(66)	1.402(6)
O(3)-C(65)	1.417(5)
C(64)-C(65)	1.486(7)
C(66)-C(67)	1.484(6)

C(7)-Pd(1)-C(8)	38.00(6)
C(7)-Pd(1)-P(1)	101.33(5)
C(8)-Pd(1)-P(1)	138.37(5)
C(7)-Pd(1)-P(2)	142.37(5)
C(8)-Pd(1)-P(2)	105.15(5)
P(1)-Pd(1)-P(2)	116.195(18)
C(25)-P(1)-C(18)	103.07(8)
C(25)-P(1)-C(32)	102.47(7)
C(18)-P(1)-C(32)	104.79(8)
C(25)-P(1)-Pd(1)	114.47(6)
C(18)-P(1)-Pd(1)	111.44(5)
C(32)-P(1)-Pd(1)	118.93(6)
C(53)-P(2)-C(46)	103.27(8)
C(53)-P(2)-C(39)	102.82(8)
C(46)-P(2)-C(39)	104.99(8)
C(53)-P(2)-Pd(1)	116.04(6)
C(46)-P(2)-Pd(1)	108.39(6)
C(39)-P(2)-Pd(1)	119.67(6)
C(61)-O(2)-C(62)	113.51(18)
C(6)-C(1)-C(2)	117.87(15)
C(6)-C(1)-C(7)	118.31(15)
C(2)-C(1)-C(7)	123.74(15)
C(3)-C(2)-C(1)	121.10(17)
C(2)-C(3)-C(4)	120.03(17)
C(5)-C(4)-C(3)	119.87(16)
C(4)-C(5)-C(6)	119.89(17)

C(5)-C(6)-C(1)	121.24(16)
C(8)-C(7)-C(1)	123.70(15)
C(8)-C(7)-Pd(1)	72.00(9)
C(1)-C(7)-Pd(1)	117.27(11)
C(7)-C(8)-C(9)	116.93(15)
C(7)-C(8)-Pd(1)	70.00(9)
C(9)-C(8)-Pd(1)	111.36(11)
O(1)-C(9)-C(8)	122.78(16)
O(1)-C(9)-C(10)	119.69(15)
C(8)-C(9)-C(10)	117.43(15)
C(11)-C(10)-C(9)	118.32(17)
C(10)-C(11)-C(12)	129.70(18)
C(13)-C(12)-C(17)	118.30(17)
C(13)-C(12)-C(11)	123.55(17)
C(17)-C(12)-C(11)	118.12(17)
C(14)-C(13)-C(12)	120.47(18)
C(13)-C(14)-C(15)	120.36(19)
C(16)-C(15)-C(14)	120.02(18)
C(15)-C(16)-C(17)	119.73(18)
C(16)-C(17)-C(12)	121.13(19)
C(23)-C(18)-C(19)	119.36(15)
C(23)-C(18)-P(1)	121.31(13)
C(19)-C(18)-P(1)	119.29(12)
C(20)-C(19)-C(18)	118.19(15)
C(20)-C(19)-C(24)	118.49(15)
C(18)-C(19)-C(24)	123.31(15)
C(21)-C(20)-C(19)	121.88(17)
C(20)-C(21)-C(22)	119.72(17)
C(21)-C(22)-C(23)	119.43(16)
C(22)-C(23)-C(18)	121.41(16)
C(30)-C(25)-C(26)	119.06(15)
C(30)-C(25)-P(1)	114.75(13)
C(26)-C(25)-P(1)	126.19(13)
C(27)-C(26)-C(25)	117.61(17)
C(27)-C(26)-C(31)	117.96(16)
C(25)-C(26)-C(31)	124.43(15)

C(28)-C(27)-C(26)	122.57(18)
C(27)-C(28)-C(29)	119.37(16)
C(28)-C(29)-C(30)	119.35(18)
C(25)-C(30)-C(29)	122.01(17)
C(37)-C(32)-C(33)	118.61(15)
C(37)-C(32)-P(1)	120.28(12)
C(33)-C(32)-P(1)	120.98(12)
C(34)-C(33)-C(32)	118.50(15)
C(34)-C(33)-C(38)	118.98(15)
C(32)-C(33)-C(38)	122.48(15)
C(35)-C(34)-C(33)	122.04(16)
C(36)-C(35)-C(34)	119.43(16)
C(35)-C(36)-C(37)	119.75(16)
C(36)-C(37)-C(32)	121.52(15)
C(44)-C(39)-C(40)	118.56(15)
C(44)-C(39)-P(2)	120.84(14)
C(40)-C(39)-P(2)	120.35(12)
C(41)-C(40)-C(39)	118.88(16)
C(41)-C(40)-C(45)	118.73(17)
C(39)-C(40)-C(45)	122.36(15)
C(42)-C(41)-C(40)	121.74(19)
C(41)-C(42)-C(43)	119.39(17)
C(44)-C(43)-C(42)	119.81(18)
C(43)-C(44)-C(39)	121.56(18)
C(51)-C(46)-C(47)	119.03(17)
C(51)-C(46)-P(2)	121.58(15)
C(47)-C(46)-P(2)	119.33(14)
C(48)-C(47)-C(46)	118.63(19)
C(48)-C(47)-C(52)	118.72(18)
C(46)-C(47)-C(52)	122.61(16)
C(49)-C(48)-C(47)	121.2(2)
C(50)-C(49)-C(48)	120.4(2)
C(49)-C(50)-C(51)	119.7(2)
C(50)-C(51)-C(46)	121.1(2)
C(58)-C(53)-C(54)	118.92(17)
C(58)-C(53)-P(2)	114.77(13)

C(54)-C(53)-P(2)	126.29(14)
C(55)-C(54)-C(53)	117.95(18)
C(55)-C(54)-C(59)	118.03(18)
C(53)-C(54)-C(59)	124.01(18)
C(56)-C(55)-C(54)	122.15(19)
C(57)-C(56)-C(55)	120.06(19)
C(56)-C(57)-C(58)	118.88(19)
C(57)-C(58)-C(53)	122.03(18)
O(2)-C(61)-C(60)	108.43(19)
O(2)-C(62)-C(63)	108.6(2)
C(66)-O(3)-C(65)	112.1(3)
O(3)-C(65)-C(64)	108.3(4)
O(3)-C(66)-C(67)	111.3(4)

Symmetry transformations used to generate equivalent atoms:

Table 4S. Anisotropic displacement parameters ($\text{\AA}^2 \times 10^3$) for **2**. The anisotropic displacement factor exponent takes the form: $-2\pi^2 [h^2 a^{*2} U^{11} + \dots + 2 h k a^* b^* U^{12}]$

	U ¹¹	U ²²	U ³³	U ²³	U ¹³	U ¹²
Pd(1)	14(1)	14(1)	15(1)	-3(1)	-1(1)	-1(1)
P(1)	14(1)	13(1)	16(1)	-3(1)	0(1)	-2(1)
P(2)	16(1)	18(1)	17(1)	-3(1)	-3(1)	1(1)
O(1)	23(1)	20(1)	20(1)	-3(1)	-1(1)	-4(1)
O(2)	40(1)	35(1)	44(1)	-9(1)	-4(1)	-6(1)
C(1)	15(1)	15(1)	17(1)	-3(1)	0(1)	2(1)
C(2)	18(1)	18(1)	18(1)	-2(1)	1(1)	2(1)
C(3)	18(1)	18(1)	28(1)	-2(1)	3(1)	-3(1)
C(4)	18(1)	18(1)	32(1)	-6(1)	-4(1)	-3(1)
C(5)	20(1)	18(1)	24(1)	-4(1)	-6(1)	1(1)
C(6)	17(1)	15(1)	20(1)	-2(1)	-1(1)	0(1)
C(7)	14(1)	15(1)	19(1)	-3(1)	-1(1)	0(1)
C(8)	16(1)	16(1)	18(1)	-3(1)	0(1)	0(1)
C(9)	15(1)	18(1)	18(1)	-3(1)	-2(1)	2(1)
C(10)	19(1)	20(1)	17(1)	-3(1)	-2(1)	0(1)
C(11)	24(1)	22(1)	18(1)	-3(1)	-1(1)	-2(1)
C(12)	22(1)	20(1)	22(1)	-7(1)	-2(1)	-2(1)
C(13)	30(1)	20(1)	23(1)	-4(1)	-1(1)	-2(1)
C(14)	31(1)	28(1)	22(1)	-4(1)	-2(1)	0(1)
C(15)	26(1)	31(1)	26(1)	-13(1)	-2(1)	-2(1)
C(16)	33(1)	23(1)	31(1)	-11(1)	0(1)	-7(1)
C(17)	31(1)	24(1)	23(1)	-5(1)	2(1)	-6(1)
C(18)	17(1)	15(1)	14(1)	-2(1)	2(1)	-2(1)
C(19)	19(1)	15(1)	17(1)	-2(1)	3(1)	-2(1)
C(20)	25(1)	16(1)	22(1)	0(1)	2(1)	0(1)
C(21)	25(1)	26(1)	18(1)	2(1)	-3(1)	2(1)
C(22)	24(1)	26(1)	17(1)	-2(1)	-3(1)	-4(1)
C(23)	21(1)	16(1)	17(1)	-4(1)	1(1)	-2(1)
C(24)	21(1)	15(1)	26(1)	-4(1)	2(1)	-2(1)
C(25)	16(1)	12(1)	21(1)	-2(1)	1(1)	-1(1)
C(26)	22(1)	15(1)	24(1)	-2(1)	4(1)	-1(1)

C(27)	24(1)	16(1)	31(1)	-2(1)	8(1)	-2(1)
C(28)	18(1)	20(1)	46(1)	-5(1)	4(1)	-6(1)
C(29)	20(1)	23(1)	36(1)	-8(1)	-5(1)	-5(1)
C(30)	19(1)	18(1)	24(1)	-4(1)	0(1)	-3(1)
C(31)	24(1)	33(1)	20(1)	-3(1)	6(1)	-1(1)
C(32)	20(1)	14(1)	15(1)	-2(1)	-2(1)	-1(1)
C(33)	19(1)	15(1)	20(1)	-2(1)	-1(1)	-2(1)
C(34)	24(1)	15(1)	28(1)	-4(1)	3(1)	-4(1)
C(35)	28(1)	15(1)	34(1)	-7(1)	5(1)	-2(1)
C(36)	24(1)	17(1)	28(1)	-4(1)	4(1)	1(1)
C(37)	18(1)	18(1)	21(1)	-3(1)	1(1)	-2(1)
C(38)	20(1)	17(1)	28(1)	-4(1)	3(1)	-3(1)
C(39)	18(1)	24(1)	22(1)	-4(1)	-6(1)	-2(1)
C(40)	22(1)	22(1)	28(1)	-5(1)	-9(1)	-1(1)
C(41)	28(1)	26(1)	42(1)	-3(1)	-13(1)	-7(1)
C(42)	22(1)	37(1)	58(2)	-6(1)	-15(1)	-7(1)
C(43)	21(1)	31(1)	57(2)	-6(1)	-14(1)	3(1)
C(44)	21(1)	22(1)	37(1)	-4(1)	-7(1)	0(1)
C(45)	26(1)	20(1)	44(1)	-2(1)	-11(1)	-3(1)
C(46)	25(1)	23(1)	16(1)	-2(1)	-4(1)	6(1)
C(47)	26(1)	27(1)	19(1)	4(1)	0(1)	7(1)
C(48)	38(1)	37(1)	24(1)	5(1)	7(1)	12(1)
C(49)	57(1)	44(1)	16(1)	-2(1)	5(1)	20(1)
C(50)	56(1)	36(1)	22(1)	-11(1)	-13(1)	16(1)
C(51)	35(1)	28(1)	25(1)	-7(1)	-11(1)	8(1)
C(52)	20(1)	30(1)	29(1)	1(1)	3(1)	1(1)
C(53)	16(1)	18(1)	21(1)	-2(1)	0(1)	1(1)
C(54)	22(1)	25(1)	24(1)	2(1)	0(1)	4(1)
C(55)	33(1)	26(1)	34(1)	8(1)	1(1)	5(1)
C(56)	33(1)	19(1)	45(1)	0(1)	1(1)	1(1)
C(57)	25(1)	22(1)	34(1)	-8(1)	0(1)	-2(1)
C(58)	18(1)	20(1)	23(1)	-2(1)	-1(1)	0(1)
C(59)	44(1)	37(1)	22(1)	2(1)	-8(1)	15(1)
C(60)	46(1)	48(2)	31(1)	-2(1)	1(1)	4(1)
C(61)	59(2)	35(1)	43(2)	-11(1)	-5(1)	3(1)
C(62)	54(2)	43(2)	64(2)	-5(1)	-13(1)	-17(1)

C(63)	38(1)	59(2)	73(2)	1(2)	-3(1)	-12(1)
O(3)	32(2)	37(2)	46(2)	-5(2)	-10(1)	-1(1)
C(64)	49(2)	49(2)	47(2)	-1(2)	-8(2)	8(2)
C(65)	37(2)	42(2)	59(3)	-8(2)	-16(2)	2(2)
C(66)	37(2)	42(2)	59(3)	-8(2)	-16(2)	2(2)
C(67)	49(2)	49(2)	47(2)	-1(2)	-8(2)	8(2)

Table 5S. Hydrogen coordinates ($\times 10^4$) and isotropic displacement parameters ($\text{\AA}^2 \times 10^{-3}$) for **2**.

	x	y	z	U(eq)
H(2A)	4946	7539	7161	22
H(3A)	3600	6865	6716	26
H(4A)	3047	7305	5262	27
H(5A)	3858	8411	4248	25
H(6A)	5204	9088	4694	21
H(7A)	6175	9464	5814	19
H(8A)	5780	8682	7651	20
H(10A)	6299	9717	8819	23
H(11A)	6782	11481	7943	26
H(13A)	6139	10421	10251	29
H(14A)	6055	11244	11597	32
H(15A)	6341	12882	11520	32
H(16A)	6701	13702	10089	34
H(17A)	6790	12883	8736	31
H(20A)	6667	10443	3274	26
H(21A)	5702	9654	2413	28
H(22A)	5728	7959	2582	26
H(23A)	6716	7075	3625	22
H(24A)	7623	10496	4490	31
H(24B)	8564	9748	4232	31
H(24C)	7864	9549	5160	31
H(27A)	10945	8295	2934	29
H(28A)	11836	8517	4156	34
H(29A)	11131	8276	5680	31
H(30A)	9523	7868	5949	24
H(31A)	9657	7729	2311	40
H(31B)	8724	8415	2713	40
H(31C)	8789	7266	2957	40
H(34A)	6734	4416	4779	27
H(35A)	8201	3648	4124	31

H(36A)	9600	4490	3875	28
H(37A)	9495	6116	4206	23
H(38A)	5796	5672	5477	33
H(38B)	5995	6724	5013	33
H(38C)	6392	6367	5990	33
H(41A)	10896	9438	7540	38
H(42A)	12171	8224	7749	45
H(43A)	11839	6594	7939	43
H(44A)	10233	6203	7956	32
H(45A)	9316	9978	7266	44
H(45B)	8539	9449	7970	44
H(45C)	8666	9222	6900	44
H(48A)	5560	7362	10065	42
H(49A)	6198	8383	10989	50
H(50A)	7755	8881	10595	46
H(51A)	8665	8391	9238	35
H(52A)	5574	6591	8695	41
H(52B)	6592	5910	8643	41
H(52C)	6400	6761	7858	41
H(55A)	8841	3933	9149	39
H(56A)	8656	3211	7799	40
H(57A)	8394	4171	6441	32
H(58A)	8251	5859	6474	25
H(59A)	9101	5224	9960	53
H(59B)	8162	5996	9843	53
H(59C)	9233	6267	9440	53
H(60A)	8162	5423	1602	64
H(60B)	7776	5693	2635	64
H(60C)	7606	6475	1785	64
H(61A)	6526	5483	1225	55
H(61B)	6693	4706	2084	55
H(62A)	5013	4913	2670	63
H(62B)	4778	5661	1806	63
H(63A)	3627	5948	3118	85
H(63B)	4199	6882	2800	85
H(63C)	4506	6190	3677	85

H(64A)	11279	7795	10385	74
H(64B)	10536	7900	9598	74
H(64C)	10125	8036	10654	74
H(65A)	10982	9438	10616	55
H(65B)	11299	9319	9535	55
H(66A)	10395	10816	9113	55
H(66B)	10162	10959	10198	55
H(67A)	8993	11911	9412	74
H(67B)	8468	11067	10016	74
H(67C)	8729	10987	8926	74
