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BIS(PENTAMETHYLCYCLOPENTADIENYL)CARBOXYLATO AND DITHIOCARBAMATO DERIVATIVES OF NEODYMIUM(III) AND YTTERBIUM(III) . CRYSTAL STRUCTURE OF BIS (PENTAMETHYL-CYCLOPENTADIENYL) DIETHYLDITHIOCARBAMATOYTTERBIUM(III)

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July 1981

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#### BIS(PENTAMETHYLCYCLOPENTADIENYL)CARBOXYLATO AND DITHIOCARBAMATO DERIVATIVES OF NEODYMIUM(III) AND YTTERBIUM(III). CRYSTAL STRUCTURE OF BIS(PENTAMETHYLCYCLOPENTADIENYL)DIETHYLDITHIOCARBAMATO-YTTERBIUM(III)

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#### ABSTRACT

The pentamethylcyclopentadienyl derivatives,  $(Me_5C_5)_2Yb(0_2CR)$ where R is  $Me_3C$  or  $CF_3$ ,  $(Me_5C_5)_2Yb(S_2CNEt_2)$  and  $(Me_5C_5)_2Nd(S_2CNEt_2)$ have been prepared by metathetical exchange reactions on the anionic species,  $[(Me_5C_5)_2MCl_2]^-$ . The crystal structure of  $(Me_5C_5)_2Yb(S_2CNEt_2)$  has been determined by single crystal X-ray diffraction methods. The crystals are monoclinic, C2/c, with cell dimensions <u>a</u> = 12.268(4) Å, <u>b</u> = 15.536(6) Å, <u>c</u> = 14.269(5) Å,  $\beta = 105.23(3)^\circ$  and V = 2624 Å^3. For Z = 4 the calculated density is 1.14 g/cm<sup>3</sup>. The structure was refined to a conventional R factor of 0.039 using 2179 data where  $F^2 > 3\sigma(F^2)$ . The Yb(III) atom is bonded to two sulfur atoms and to two pentamethylcyclopentadienyl

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groups. The Yb atom lies on a crystallographic two-fold axis. The dithiocarbamato ligand is disordered in the structure. The Yb-S distance is 2.70(1) Å, and the average of 5 Yb-C distances is 2.63(3) Å.

#### INTRODUCTION

In attempting to develop the chemistry of reactive organometallic lanthanide systems, we have had an interest in preparing neutral, basefree pentamethylcyclopentadienyl derivatives of the di- and trivalent metals. The strong Lewis-acidic nature of these metals has led to isolation of trivalent species such as  $(C_5Me_5)_2YbCl_2Na(OEt_2)_2$  and  $(C_5Me_5)_2YbCl(thf)$ ,<sup>1,2</sup> as well as the divalent species  $Yb(C_5Me_5)_2(thf)$ and  $Eu(C_5Me_5)_2(thf)$ .<sup>3</sup> The neutral base-free systems are of interest since these coordinatively unsaturated species are expected to exhibit a rich chemistry and, perhaps, to lead to compounds of unusual structural types.

Isolation of  $(C_5Me_5)_2YbCl_2Na(OEt_2)_2$  and  $(C_5Me_5)_2YbCl(thf)$ suggests that a chelating ligand that can donate four electrons to the metal could yield neutral, base-free trivalent compounds. Such compounds might then be useful for preparation of the base-free ytterbium(II) metallocenes, if reduction in a non-coordinating solvent can be effected. Since carboxylate  $(RCO_2)$  ligands have been effectively utilized as leaving groups in transition metal chemistry, they seemed to be ideally suited for this task. Another chelating ligand, diethyldithiocarbamate  $(Et_2NCS_2)$ , is electronically similar, but contains the softer sulfur atoms as donors. Because little is known about the properties of sulfur-based ligands in molecular lanthanide systems, we have conducted a low-temperature magnetic susceptibility study, as well as an X-ray crystal structure determination of  $(C_5Me_5)_2Yb(S_2CNEt_2)$ .

#### RESULTS AND DISCUSSION

Preparation of the carboxylate and dithiocarbamate derivatives of ytterbium is straightforward. The analogous neodymium dithio-

$$Na(OEt_2)_2(Me_5C_5)_2YbC1_2 \xrightarrow{NaO_2CR} (Me_5C_5)_2Yb(O_2CR) R = CF_3 \text{ or } CMe_3 NaS_2CNEt_2 \xrightarrow{(Me_5C_5)_2Yb(S_2CNEt_2)} (Me_5C_5)_2Yb(S_2CNEt_2)$$

carbamate,  $(Me_5C_5)_2Nd(S_2CNEt_2)$ , was prepared similarly. The physical properties are described in the experimental section. Because two donor atoms are present,  $R_2CO_2^-$  and the softer  $Et_2NCS_2^-$  allow isolation of ether-free complexes. Unfortunately the ytterbium(III) species could not be reduced with sodium amalgam in refluxing toluene. Further,  $(Me_5C_5)_2YbN(SiMe_3)_2^{-1}$  could not be reduced under similar conditions.

The similarity in the magnetic behavior of  $(C_5Me_5)_2Yb(O_2CCMe_3)$ and  $(C_5Me_5)_2Yb(S_2CNEt_2)$  at low temperature (see experimental section) suggests that the magnetic properties of the ytterbium ions in these complexes are not effected by the change from carboxylate to dithiocarbomate ligand. The magnetic moments (5-45K), 3.29 and 3.39 B.M., respectively, are close in value to those observed for other ytterbium(III) complexes over this temperature range.<sup>1,4,5</sup>

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The ytterbium dithiocarbamate complex crystallizes as well-formed, purple prisms that are monoclinic, space group C2/c, with cell dimensions  $\underline{a} = 12.268(4)$  Å,  $\underline{b} = 15.536(6)$  Å,  $\underline{c} = 14.269(5)$  Å, and  $\underline{\beta} = 105.23(3)^{\circ}$ . For Z = 4 and a molecular weight of 652.98, the calculated density is 1.14 g/cm<sup>3</sup>. A few structures containing lanthanide to sulfur bonds have been determined, 6,7,8 but the present structure is the first example of an Yb-S bond.

Positional parameters, with labelling as shown in Fig. 1, are given in Table I. A list of selected distances and angles are given in Tables II and III.

The molecule consists of the Yb atom bonded to two pentamethylcyclopentadienyl rings and to two sulfur atoms of the diethyldithiocarbamate ligand, Fig. 1. The average of five Yb-C distances is 2.63  $\pm$ 0.03 Å and the Yb-S distance is 2.70 Å. The pentamethylcyclopentadienyl rings are in a staggered configuration with respect to each other, see Fig. 2. The diethyldithiocarbamate ligand is disordered; atoms N, C(12A), C(13A), C(12B) and C(13B) are in general positions with half of the molecules in the given conformation (Fig. 1) and half in the conformation that would result from a 180° rotation about the two-fold axis. The sulfur atoms are most probably disordered as well, as seen by their elliptical shape in Fig. 1, but the separation of the two positions was too small to be treated in the least-squares as separate half-atoms and instead was refined as a large thermally anisotropic atom. Because of this disorder the molecule as a whole has low symmetry C<sub>1</sub>, however the  $(Me_5C_5)_2$ Yb part of the molecule has perfect  $C_2$  symmetry. Attempts to define the structure in a lower symmetry space group were unsuccessful.

The Yb-C distances (to the  $C_5$  ring) average 2.63  $\pm$  0.03 Å. The Yb atom is 2.33 Å from the mean plane of atoms C(1) though C(5). These ring atoms are all within 0.006 Å of this plane. The five methyl carbon atoms of the pnetamethylcyclopentadienyl group are all bent out of the mean plane away from the Yb atom; the distances from the plane are 0.18, 0.19, 0.12, 0.07 and 0.34 Å for atoms C(6) through C(10), respectively.

The ytterbium-carbon bond length of 2.63  $\pm$  0.03 Å in the trivalent, dithiocarbamate complex is identical within experimental error to that found for this bond length (2.66  $\pm$  0.01 Å) in the divalent species,  $(Me_5C_5)_2Yb(thf)$ .<sup>3</sup> Since the oxidation state and coordination number of the latter are one less than the former, both quantities are important in determining average metal to ligand bond lengths.<sup>9</sup>

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#### EXPERIMENTAL

All operations were carried out under nitrogen. Microanalyses were performed by the microanalytical laboratory of this department. Infrared spectra were recorded on a Perkin-Elmer instrument as Nujol mulls between cesium iodide windows. The <sup>1</sup>H NMR spectra were recorded on a JEOL-FX90Q instrument on toluene-d<sub>8</sub> solutions and are reported in  $\delta$ -units (positive values to high field of Me<sub>4</sub>Si). Solid state magnetic susceptibilities were obtained as previously described.<sup>10</sup>

Bis(pentamethylcyclopentadienyl)(2,2-dimethylpropionato)ytterbium

(III). Sodium bis(pentamethylcyclopentadienyl)dichloroytterbium bis(diethylether)<sup>5</sup> (1.7 g, 0.0025 mol) in diethyl ether (30 mL) was added to a suspension of sodium 2,2-dimethylpropionate [prepared by stirring sodium hydride with pivalic acid in diethyl ether for 12 h] (0.31 g, 0.0025 mol) in diethyl ether (20 mL). After stirring for 6 h the red solution was evaporated to dryness and the residue was extracted with pentane (35 mL). The extract was filtered and cooled (-70°C). The red prisms (0.65 g, 48%) were collected and dried under reduced pressure, mp 154-155°C. <u>Anal</u>. Calcd for  $C_{25}H_{39}O_2$ Yb: C, 55.1; H, 7.22. Found: C, 55.2; H, 7.19. The mass spectrum gave a monomeric molecular ion (545) as well as peaks due to higher oligomers at 924, 889, 820, 802, 749, 612, and 571. <sup>1</sup>H NMR (+35°C):  $\delta$  10.95 ( $v_{1/2}$  = 107 Hz), 30 H;  $\delta$  - 26.45 ( $v_{1/2}$  = 21 Hz), 9 H. IR: 2713 w, 1503 m, 1489 m, 1430 m, 1225 s, 1169 w, 1064 w, 1026 m, 940 w, 896 s, 810 m, 793 m, 617 m,

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474 w, 408 m, 388 m, 319 s, cm<sup>-1</sup>. The magnetic susceptibility followed Curie behavior from 5-35 K, with  $\mu_{\rm B}$  = 3.29 B.M.

Bis(pentamethylcyclopentadienyl)(trifluoroacetato)ytterbium(III). The salt, Na(OEt<sub>2</sub>)<sub>2</sub>(Me<sub>5</sub>C<sub>5</sub>)<sub>2</sub>YbCl<sub>2</sub> (1.1 g, 0.0016 mol) in tetrahydrofuran (30 mL) was added to NaO<sub>2</sub>CCF<sub>3</sub> (0.22 g, 0.0016 mol) in tetrahydrofuran (10 mL) and the red solution was stirred for 12 h. The tetrahydrofuran was removed under reduced pressure and the residue was extracted with diethyl ether (2 x 40 mL). The extract was filtered, and cooling (-10°C) yielded violet prisms in 57% (0.50 g) yield, mp 262-263°C. <u>Anal</u>. Calcd for  $C_{22}H_{30}F_{3}O_{2}Yb$ : C, 47.5; H, 5.43. Found: C, 47.7; H, 5.49. The mass spectrum afforded a monomeric molecular ion at 557. IR: 3140 w, 3092 w, 2726 w, 1680 s, 1204 s, 1158 s, 1023 w, 847 m, 785 m, 718 m, 614 w, 592 w, 523 w, 468 w, 385 m, 312 s, cm<sup>-1</sup>.

<u>Bis(pentamethylcyclopentadienyl)(diethyldithiocarbamato)ytterbium(III)</u>. The anionic complex, Na(OEt<sub>2</sub>)<sub>2</sub>(Me<sub>5</sub>C<sub>5</sub>)<sub>2</sub>YbCl<sub>2</sub> (1.4 g, 0.0020 mol) in diethyl ether (40 mL) was added to sodium diethyldithiocarbamate (0.35 g, 0.0020 mol) in diethyl ether (20 mL). After stirring for 8 h the diethyl ether was removed under reduced pressure. The residue was extracted with pentane (40 mL), and filtered. Concentration of the filtrate to <u>ca</u>. 10 mL and cooling (-10°C) yielded purple prisms in 81% (0.97 g) yield, mp 226-227°C. <u>Anal</u>. Calcd for  $C_{25}H_{40}NS_2YB$ : C, 50.7; H, 6.81; N, 2.37; S, 10.8. Found: C, 50.7; H, 6.76; N, 2.29; S, 10.7. The mass spectrum

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gave a monomeric molecular ion at 592. <sup>1</sup>H NMR (+35°C):  $\delta$  7.45 ( $v_{1/2}$  = 61 Hz), 30 H;  $\delta$  - 5.76 ( $v_{1/2}$  = 18 Hz), 4 H;  $\delta$  - 9.00 ( $v_{1/2}$  = 13 Hz), 6 H. All of the resonances were singlets. IR: 2723 w, 1487 s, 1424 s, 1360 m, 1306 w, 1277 s, 1209 m, 1241 m, 1089 m, 1023 w, 987 m, 911 m, 841 m, 800 w, 779 w, 608 w, 593 w, 564 m, 473 w, 392 m, 360 m, 311 s, cm<sup>-1</sup>. The magnetic susceptibility followed Curie behavior (5-55 K), giving  $\mu_{\rm B}$  = 3.39 B.M.

<u>Bis(pentamethylcyclopentadienyl)(diethyldithiocarbamato)neodymium</u> (III). The anionic complex, Li(OEt<sub>2</sub>)<sub>2</sub>(Me<sub>5</sub>C<sub>5</sub>)<sub>2</sub>NdCl<sub>2</sub>, (2.2 g, 0.034 mol) in diethyl ether (40 mL) was added to NaS<sub>2</sub>CNEt<sub>2</sub> (0.58 g, 0.0034 mol) in diethyl ether (20 mL). After stirring for 8 h the green solution was filtered and the filtrate was concentrated to <u>ca</u>. 30 mL. Cooling (-10°C) yielded green prisms in 72% (1.4 g) yield, mp 229-231°C. <u>Anal</u>. Calcd for  $C_{25}H_{40}NNdS_2$ : C, 53.3; H, 7.16; N, 2.49. Found: C, 53.5; H, 7.03; N, 2.47. The mass spectrum gave a monomeric molecular ion at 562. <sup>1</sup>H NMR (+70°C): δ 7.00 ( $v_{1/2}$  = 23 Hz), 30 H; δ - 0.10 ( $v_{1/2}$  = 17 Hz), 4 H; δ - 0.94 ( $v_{1/2}$  = 16 Hz), 6 H. The resonances were singlets. IR: 2722 w, 1482 s, 1420 s, 1357 m, 1402 w, 1273 s, 1203 s, 1138 m, 1087 m, 1063 w, 1021 w, 979 m, 905 m, 836 m, 798 w, 773 w, 607 w, 560 m, 470 w, 430 w, 382 m, 348 m, 310 s, cm<sup>-1</sup>. The magnetic susceptibility followed Curie behavior (5-50 K) giving μ<sub>B</sub> = 2.75 B.M.

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Some of the air sensitive purple crystals were inserted into thin walled quartz capillaries in an argon filled dry box. A crystal was examined with a Picker FACS-I automated diffractometer equipped with a graphite monochromator and a Mo X-ray tube ( $\lambda(K\alpha_1)$  0.70930 Å). Omega scans of several low angle reflections showed peaks with half-widths of 0.13° to 0.20°. The space group is C2/c. The setting angles of twelve manually centered reflections (4 < 20 < 49°) were used to determine cell parameters by least-squares.

Intensity data were collected using a 0-20 scan technique with a scan speed of 2°/min on 20. Each peak was scanned 0.9° before the K $\alpha_1$  peak to 0.9° after the K $\alpha_2$  peak, and backgrounds were counted for 10 s at each end of the scan range. The temperature during the data collection was 24 ± 1°C. Three standard reflections were measured every 250th scan. A total of 4748 scans (4° < 20 < 45°) yielded 2327 unique data of which 2175 had F<sup>2</sup> > 3 $\sigma$ . Absorption correction ( $\mu$  = 37.0 cm<sup>-1</sup>) was applied<sup>11</sup> which ranged from 1.53 to 1.98. The intensities of the three standard reflections decayed about 4% during the data collection period and the data were corrected for this effect.

A three dimensional Patterson calculation showed the Yb and S atom positions, and a subsequent least-squares refinement and Fourier calculation revealed all the non-hydrogen atoms in the structure. After a few cycles of least-squares refinements of the structure in which only the Yb and S atoms were assigned anisotropic thermal parameters the R factor,  $R = \Sigma ||F_0| - |F_c||/\Sigma|F_0|$ , was 0.055.

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The ethyl carbon atoms of the diethyldithiocarbamate ligand were ill behaved in the refinements as indicated by large thermal parameters and chemically unsatisfactory bond distances to adjacent atoms. A difference Fourier map showed additional electron density in the region of the ethyl carbon atoms as well as the nitrogen atom, indicating disorder. The two ethyl carbon atoms were subsequently described as four half-atoms and the nitrogen atom was allowed to wander from the special position on the two-fold axis. With further refinements the structural parameters converged to their final and satisfactory results. Several attempts were made to refine the structure in the non-centric space group Cc, but the resulting structure would not converge to a reasonable chemical model, and the resulting R factors, despite the increased number of parameters, were not significantly different from the centric refinements. The least-squares function used minimizes the function  $\Sigma w(|F_0| - |F_c|)^2 / \Sigma w F_0^2$ . The expressions used in processing the data and estimating weights are given in the supplementary material; the "ignorance factor" was set to 0.05. Scattering factors from International Tables<sup>12</sup> and anomalous dispersion corrections  $1^3$  were applied. In the final refinement all of the atoms with the exception of the carbon atoms in the dithiocarbamate ligand were assigned anisotropic thermal parameters. Hydrogen atoms were not included.

The discrepancy indices for 2175 data were  $F^2$  >  $3\sigma$  are

 $R = \Sigma ||R_0| - |F_0| |/\Sigma |F_0| = 0.039$ 

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$$R_{W} = [\Sigma \underline{w}(|F_{0}| - |F_{c}|)^{2} / \Sigma \underline{w}|F_{0}|^{2}]^{1/2} = 0.052$$

R for all 2327 data is 0.041. The error in an observation of unit weight is 1.84. In the last cycle, no parameter changed more than 0.1  $\sigma$ . In the final difference Fourier the largest electron density peak was ~0.5 e/Å<sup>3</sup> and was near the Yb atom.

#### ACKNOWLEDGMENT

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#### SUPPLEMENTARY MATERIAL AVAILABLE

Data processing formulas, the table of thermal parameters and the listing of structure factor amplitudes (10 pages). Ordering information is given on any current masthead page.

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[ab]e	I.	Positional	Parameters <u>a</u>
ubic	* •	10010101101	

x	У	Z
0	.20917(2)	.250
.0541(2)	.3539(1)	.3565(1)
•0376(8)	.4957(6)	.2433(9)
.1806(5)	.1109(4)	.3012(4)
.2238(5)	.1953(4)	.2979(5)
.1918(6)	.2255(4)	.2007(5)
.1295(5)	•1593(4)	.1426(4)
•1228(5)	.0883(4)	.2039(4)
•2073(6)	.0528(6)	.3897(6)
.3844 (7)	.2424(7)	.3808(6)
.2298(8)	.3101(6)	.1665(8)
.0840(8)	.1608(6)	.0334(5)
.0880(7)	0017(5)	.1665(7)
0	.4078(8)	.250
.108(2)	.544(1)	.330(2)
.031(3)	•580(2)	.384(3)
.005(1)	.541(1)	.151(1)
116(2)	•577(2)	.125(2)
	X 0 0541(2) 0376(8) 1806(5) 2238(5) 1918(6) 1295(5) 1228(5) 2873(6) 3044(7) 2298(8) 0840(8) 0840(8) 0880(7) 0 108(2) 031(3) 005(1) 116(2)	xy0 $.20 \le 17(2)$ $.0541(2)$ $.3539(1)$ $.0376(8)$ $.4957(6)$ $.1806(5)$ $.1109(4)$ $.2238(5)$ $.1953(4)$ $.1918(6)$ $.2255(4)$ $.1295(5)$ $.1593(4)$ $.1228(5)$ $.0883(4)$ $.2873(6)$ $.0528(6)$ $.3044(7)$ $.2424(7)$ $.2298(8)$ $.3101(6)$ $.0840(8)$ $.1608(6)$ $.0880(7)$ $0017(5)$ 0 $.4078(8)$ $.108(2)$ $.544(1)$ $.055(1)$ $.541(1)$ $116(2)$ $.577(2)$

 $\frac{a}{2}$  Here and in the following tables the number in parentheses is the estimated standard deviation in the least significant digit.

Table II. Interatomic Distances (Å)

2.63(1)

2.66(1)

Yb	-	2	C(1)
Yb	-	2	C(2)
Yb	-	2	C(3)
Yb	-	2	C(4)

Yb

Yb	-	2 C(3)	2.64(1)
Yb	-	2 C(4)	2.60(1)
ΫΥЬ	-	2 C(5)	2.60(1)
Yb	-	2 S	2.70(1)
S	÷	C(11)	1.71(1)
C(11)	-	N	1.45(2)
N	-	C(12A)	1.50(2)
N	· <b></b>	C(12B)	1.46(2)
C(12A)	-	C(13A)	1.49(4)
C(12B)	-	C(13B)	1.53(3)

C(1)	-	C(2)	1.42(1)
C(2)	-	C(3)	1.42(1)
C(3)	. –	C(4)	1.41(1)
C(4)	-	C(5)	1.42(1)
C(5)	- 1	C(1)	1.43(1)
C(1)	- '	C(6)	1.52(1)
C(2)		C(7)	1.52(1)
C(3)	-	C(8)	1.52(1)
C(4)	-	C(9)	1.51(1)
C(5)	-	C(10)	1.52(1)
		· · ·	

Table	III.	Selected	angles	(deg.) <u>a</u>
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									-	
S	-	Yb	-	S'	67.1(3)	C(5)	-	C(1) -	C(2)	107(1)
C(1)	-	Yb	-	S	105.2(3)	C(1)	-	C(2) -	C(3)	109(1)
C(2)	-	Yb	-	S	80.7(2)	C(2)		C(3 <sup>1</sup> ) -	C(4)	108(1)
C(3)	-	Yb	-	S	88.0(2)	C(3)	-	C(4) -	C(5)	108(1)
C(4)	-	Yb	-	S	118.9(2)	C(4)	-	C(5) -	C(1)	108(6)
C(5)	<u>.</u> ,	Yb	-	S	132.2(2)	C(6)	-	C(1) -	C(2)	125(1)
C(1)	-	Yb	-	S'	134.8(2)	C(6)	-	C(1) -	C(5)	127(1)
C(2)	-	Yb	-	S'	107.3(2)	C(7)	-	C(2) -	C(1)	126(1)
C(3)		Yb	-	S'	82.8(2)	C(7)	-	C(2) -	C(3)	124(1)
C(4)	-	Yb	-	S'	90.8(3)	C(8)	-	C(3), -	C(2)	125(1)
C(5)	-	Yb	-	S'	122.2(3)	C(8)	-	C(3) -	C(4)	127(1)
S	-	C(11)	· -	S'	121.4(8)	C(9)	-	C(4) -	C(3)	126(1)
S	-	C(11)	-	N	117.6(6)	C(9)	-	C(4) -	C(5)	125(1)
S'	-	C(11)	-	• <b>N</b> •	117.2(6)	C(10)	_	C(5) -	C(1)	126(1)
C(11)	-	N	-	C(12A)	122(1)	C(10)	-	C(5) -	C(4)	124(1)
C(11)	-	N	-	C(12B)	120(1)					
N	-	C(12A)	) –	C(13A)	108(2)					
N	-	C(12B	)_	C(13B)	114(2)					

 $\frac{a}{P}$  primed atoms are at positions -x, y, 1/2-z.

FIGURE CAPTIONS

Fig. 1. ORTEP drawing of the molecule.

Fig. 2. ORTEP view of the molecule parallel to a line through the ring centers.



XBL 812-8216

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Fig. 1



#### SUPPLEMENTARY MATERIALS FOR

# BIS(PENTAMETHYLCYCLOPENTADIENYL)CARBOXYLATO AND DITHIOCARBAMATO DERIVATIVES OF NEODYMIUM(III) AND YTTERBIUM(III). CRYSTAL STRUCTURE OF BIS(PENTAMETHYLCYCLOPENTADIENYL)DIETHYLDITHIOCARBAMATO-

YTTERBIUM (III)

T. Don Tilley, Richard A. Andersen, Allan Zalkin\*, and David H. Templeton Thermal Parameters for  $(C_5Me_5)_2Yb(S_2CNEt_2)$ .<sup>a</sup>

C(1

ATOM	811	B22	833	812	813	B2 3
YB	3.89(2)	2.55(2)	2.58(2)		00(1)	0
S	7.49(9)	3.33(6)	3.68(6)	.17(6)	85(6)	73(5)
N	3.9(4)	3.4(4)	5.6(5)	.1(3)	.5(4)	4(4)
C(1)	4.0(2)	4.1(3)	3.8(2)	1.2(2)	.4(2)	.6(2)
C(2)	3.3(2)	4.9(3)	3.7(3)	3(2)	.1(2)	6(2)
C(3)	4.0(2)	5.0(3)	4.0(3)	3(2)	1.0(2)	0(2)
C(4)	4.6(3)	4.7(3)	2.9(2)	.3(2)	.9(2)	
C(5)	4.0(2)	3.4(2)	4.4(3)	.5(2)	.2(2)	-1.0(2)
C(6)	5.9(3)	7.0(4)	5.6(4)	1.2(3)	.3(3)	2.6(3)
C(7)	5.4(3)	7.8(4)	4.8(4)	3(3)	9(3)	-2.3(4)
C(8)	7.0(5)	5,9(4)	7.5(5)	-1.7(3)	2.8(4)	.5(4)
C'(9)	7.9(4)	7.9(5)	3.1(3)	.3(4)	.2(3)	5(3)
C(10)	6.6(4)	3.5(3)	8.7(5)	1(3)	.9(3)	-2.4(3)
C(11)	5.8(2)					· · ·
C(12A)	6.8(4)	н. 1914 - Полон Полон (1914)				
C(13A)	11.5(8)					
C(12B)	5.5(3)		· · · ·			
C(138)	9.3(6)					

 $\frac{a}{T}$  The anisotropic temperature factor has the form exp[-0.25(B<sub>11</sub>h<sup>2</sup>a\*<sup>2</sup> +  $2B_{12}hka*b* + ...)$ ]. The isotropic thermal parameter has the form  $\exp(-Bsin^2\theta/\lambda^2)$ .

OBSERVED STRUCTURE FACTORS, STANDARD DEVIATIONS, AND DIFFERENCES (ALL X 5.0) YTTERBIUM BIS (C5ME5) DITHIODIETHYLVARBAMATE F(0.0.0) = 2585

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FOB AND FCA ARE THE OBSERVED AND CALCULATED STRUCTURE FACTORS. SG = ESTIMATED STANDARD DEVIATION OF FOB. DEL = /FOB/ - /FCA/. INDICATES ZERO WEIGHTED DATA.

Ł	FOB	SG	DEL	L	F 08	SG	DEL	L	F C8	SG	DEL	L	FOB	SG	DEL	L	FOB	SG	DEL
	1. Ka	<u>.</u>	0	6	156	4	2	10	169	4	-1	5	580	15	73	-10	324	8	27
21	226	31	-6	7	430	11	5	11	0	14	-1+	6	85	2	-10	- 9	18	5	-9#
	173	Ğ	-44	Å	41	2	-á	12	161	-7	-2	ž	377	10	- 1	- 8	383	10	-ź
	270	e	-4.0	Š	760	40					4 1.	•	0.0			- 7	4.96		- 7
D	232	0	-19	9	303	10	15	, r	¶9 K≇	U g	14	0	30	. 3	3	- (	120	3	3
8	503	13	9	10	123	3	-5	0	296	8	-9	9	417	11	15	- 6	358	g	-17
10	396	10	12	11	257	7	-1	1	117	3	4	10	16	17	74	-5	236	6	-4
12	190	5	15	12	3	19	-44	<u>۲</u>	235	6	-11	11	289	8	29	- 4	431	11	-11
14	1.52	4	-1	13	171	<u> </u>	-1	3	110	3	- <u>4</u>	12	74	3	- 0	- 3	287	7	16
46	4 7 0		-2	4 4	39	7		, , , , , , , , , , , , , , , , , , ,	1.68		-	4 2	1 8 5	E	7	-2	552	4.6	17
10	137		-2		4 3 0	5			130			4 1	102	2	- 3	- 4	332	47	-4.78
	19 K =	U e	۲	12	129	4	-2	2	31	3	2	14	91	7	-2	- 1	14	2	-12-
0	579	15	-44	ł	1, K=	3,	, 8	6	162	4	1	15	143	4	-3	Ū	630	16	16
1	526	13	12	0	146	4	-15	7	106	3	-2	16	22	8	- 41	F 1	205	- 5	53
2	495	13	-14	1	562	14	-3	8	195	5	-1	н	1,K=	1.	3	2	456	12	2
3	295	7	-21	2	158	4	-2	Q	83	3	L.	-16	118	3	3	3	378	10	L.
ž	519	14	- 49	3	125	11	6	10	181	Š	-5	-15	134	ŭ	-1	4	381	10	
-	620		26		220		2			0	46	- 4 %	4 9 7	5	Ē	Ē	172	4 2	20
2	420	11	20		220		2		19 K =	U 1	10	-14	100	2	8	2	4/0	16	43
6	356	9	-8	5	280	7	5	Q	142	4	1	-13	1/6	5	-2	5	375	10	-9
7	141	- 4	-20	5	202	5	-3	1	97	3	•7	-12	133	- 4	5	1	191	5	5
8	348	9	3	7	287	8	2	2	119	3	6	-11	218	6	22	8	370	10	8
ġ	51	2	-2	8	112	3	7	3	172	4	-5	-10	113	3	3	9	68	3	-9
10	284	7	20	ğ	231	Ğ	31	- Ă	90	3	3	-g	243	Ĕ	-3	10	322	ž	38
44	4 0		24	4.0	6.9	7	-1	Ē	105	E	-1	_ 8	208	Â	1.	4.1	ь. Б.	6	Ē
<b>1</b>		0	2+					ب م	T 23	2	-1	- 0	230	-	40		170	2	
12	178	5	9	11	173	4	-4	6	82	5	-3	-/	279		-11	12	230	<u> </u>	1
13	121	3	-1	12	91	3	4	7	137	- 4	-1	-6	534	14	15	13	115	3	-1
14	150	4	0	13	111	3	-3	8	- 99	3	-2	-5	313	8	-11	14	172	- 5	1
										_					-		<u> </u>		-
15	111	3	1	14	93	- 3	3	- F	4. K=	- 0.	18	-4	770	20	- 39	15	- 54	- 4	-5
15	111	3	1	14	93 1 - Ka	3 n.	3	l n	<b>₩. Κ</b> ≡. Ω	0, 18	18 -2*	-4 -3	77'0 34 A	20	39	15	54 1.Ks	4 1.	-5
15 16	111 128	34	1 -2	14	93 1, K=	30,	3 , 10 2	1 1	H• K≡ 0 1 4 6	0. 18	18 -2*	-4 -3	77:0	20 9 a	39 5	15	54 1,K= 1.8	4	-5 7 -6*
15 16	111 128 1, K =	3 4 0,	1 -2 4 74	14	93 1, K= 264	3 8, 7	3 10 2	1 2	H, K= 0 14€	0, 18 4	18 -2* 1 7*	-4 -3 -2	770 340 340	20 9 9	39 5 -26	15 + -15	54 1,K= 18 127	4 1 9 7	-6 7 -6*
15 16 0	111 128 • K= 205	3 4 0, 5	1 -2 4 34	14   0   1	93 1, K= 264 196	3 0, 7 5	3 10 2 -2	0 1 2	H, K= 0 146 16	0. 18 4 8	18 -2+ 1 7+	-4 -3 -2 -1	770 340 340 342	20 9 9 9	39 5 -26 19	15 + -15 -14	54 1,K= 18 127	4 1 9 3	-6 7 -6* -6
15 16 9 1	111 128 •K= 205 297	3 4 0, 5 8	1 -2 4 34 -35	14 0 1 2	93 1,K= 264 196 392	3 0, 7 5 10	3 10 2 -2 -14	0 1 2 3	H,K= 0 146 16 164	0. 18 4 8 4	18 -2* 1 7* -3	-4 -3 -2 -1	770 340 340 342 387	20 9 9 9	39 -26 19 -15	15 -15 -14 -13	54 1,K= 18 127 23	4 1 9 3 5	-6 7 -6 -6 -1
15 16 0 1 2	111 128 1,K= 205 297 320	3 4 0, 5 8 8	1 -2 4 34 -35 -8	14 0 1 2 3	93 1, K= 264 196 392 224	3 0, 7 5 10 6	3 10 2 -2 -14 -4	1 2 3	H, K= 0 146 16 164 H, K=	0. 18 4 8 4 1	18 -2* 1 7* -3 1	-4 -3 -2 -1 0 1	770 340 340 342 342 387 349	20 9 9 9 10 9	39 -26 19 -15 19	15 -15 -14 -13 -12	54 1,K= 18 127 23 220	419356	-6 7 -6* -6 -1*
15 16 0 1 2 3	111 128 • K = 205 297 320 656	3 4 0, 5 8 8 17	1 -2 4 34 -35 -8 36	14 0 1 2 3 4	93 ,K= 264 196 392 224 458	3 7 5 10 6 12	3 10 2 -2 -14 -4 -4	 0 1 2 3 -16	H, K= 0 146 16 164 H, K= 46	0. 18 4 8 4 1. 4	18 -2* 1 7* -3 1 -3	-4 -3 -2 -1 0 1 2	770 340 340 342 387 349 365	20 9 9 10 9	39 -26 19 -15 19 -46	15 -15 -14 -13 -12 -11	54 1,K= 18 127 23 220 43	4193563	-6 7 -6* -1* 0 4
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15 16 0 1 2 3 4 5	111 128 • K = 205 297 320 656 299 670	3 4 5 8 8 17 17	1 -2 34 -35 -8 36 -53 -27	14 0 1 2 3 4 5 5	93 5K= 264 196 392 224 458 189 312	3 8 7 5 10 6 12 5 8	3 10 2 -2 -14 -4 -8 7 24	1 2 3 -16 -15	H, K= 146 166 164 H, K46 115 61	0 • 18 4 8 4 1 • 4 3 3	18 -2* 1 7* -3 -3 -9 -3	-4 -3 -2 -1 0 1 2 3	770 340 342 342 387 365 412	20 9 9 10 9 10 10	39 -26 -15 -15 -46 17	15 -15 -14 -13 -12 -11 -10	54 1,K= 18 127 23 220 43 311 151	419356384	-6 -6 -6 -1 4 19 8
15 16 0 1 2 3 4 5	111 128 • K= 205 297 320 656 299 670	3 4 0, 5 8 17 8 17	1 -2 34 -35 -8 36 -53 27	14 0 1 2 3 4 5 6 7	93 5 K= 264 196 392 224 458 189 312	3 7 5 10 6 12 5 8	3 10 -2 -14 -4 -8 7 24	8 1 2 3 -16 -15 -14	H. K= 146 166 164 H. 465 1151 77		18 -2* 1 7* -3 1 -3 -9 -3	-4 -3 -2 -1 0 1 2 3 4	770 340 342 387 365 412 30	20 9 9 10 9 10 13	39 -26 -15 -15 -43 17	15 -15 -14 -13 -12 -11 -10 -9	54 ,K= 18 127 23 220 43 311 151 303	4193563848	-5 7 -6* -5 -1* 0 4 19 8
15 16 0 12 3 4 5 6	111 128 1,K= 205 297 320 656 299 670 357	3 4 5 8 17 8 17 9	1 -2 34 -35 -53 -53 24	14 0 1 2 3 4 5 6 7	93 5 K= 264 196 392 224 458 189 312 152	3 7 5 10 6 12 5 8 4	3 10 2 -2 -14 -4 -8 7 24 10	1 0 1 2 3 -16 -15 -14 -13	1, K=         146         166         164         1, K=         165         115         172		18 -2* 1 7* -3 -3 -3 -3 -3 -3 -3	-4 -3 -2 -1 0 1 2 3 4 5	770 340 342 389 365 412 309 412 309	20 9 9 10 9 10 13 10	395-299 -195-196 -137-85	15 -15 -14 -13 -12 -11 -10 -8 -7	54 1,K= 127 23 220 43 311 303	41935638484	-5 7 -6* -1* 0 4 19 8 0
15 16 0 12 3 4 5 6 7	111 128 205 297 320 656 299 670 357 343	3 4 5 8 17 8 17 9 9	1 -2 34 -35 -36 -53 -537 26	14 0 1 2 3 4 5 6 7 8	93 264 196 392 458 312 152 129	3 7 5 10 6 12 5 8 4 3 7 5 10 6 12 5 8 4 3 7 5 10 6 12 5 8 4 3 7 5 10 6 12 5 8 4 5 8 7 5 8 7 5 10 6 12 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 5 8 7 7 5 8 7 7 5 8 7 7 5 8 7 7 7 7 7 7 7 7 7 7 7 7 7	3 10 2 -2 -14 -4 -8 7 24 10 14	10 12 3 -16 -15 -14 -13 -12	1, K=         146         164         1, K=         164         1, K=	0 • 18 4 8 4 1 4 3 3 4 9	18 -2* 1 -3 -3 -3 -3 -3 -3 -3 -1 -9*		770 3342 33442 3442 345 345 30 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	20 9 9 9 10 9 10 13 10 8	3956995963786	15 -15 -14 -13 -12 -11 -10 -8 -7	54 1, K= 127 220 311 220 311 305 157	419356384847	-5 7 -6* -1* 0 4 19 8 0 -9
15 16 0 12 3 4 5 6 7 8	111 128 .Km 205 297 320 656 299 670 357 343 182	3 4 5 8 17 8 17 9 9 5	1 -2 34 -35 -8 36 -53 27 24 10	14 0 1 2 3 4 5 6 7 8 9	93 264 196 392 458 312 152 101	3 7 5 10 6 12 5 8 4 3 3	3 10 2 -2 -14 -4 -8 7 24 10 14 -1	10 12 3 -16 -15 -14 -13 -12 -11	<pre>+, K= 146 164 164 164 164 115 61 172 314</pre>	18 48 4 1 3 3 4 19 8	18 -2* 1 -3 -3 -3 -3 -3 -3 -3 -1 -9* 40	-43-21 -2101234567	770 340 342 389 365 49 365 412 309 309	20 9 9 10 9 10 13 10 8 8	3956959637864 -19637864	15 -15 -14 -13 -12 -11 -10 -8 -7 -6	54 1, K= 127 220 311 220 311 151 303 150 274	419356384847	-6 -6 -1 -6 -1 -1 -1 -9 -9 -13
15 16 0 12 3 4 5 6 7 8 9	111 128 297 320 656 297 357 342 277	340,5 88178179957	1 -2 34 -35 -53 -53 24 10 6	14 0 1 2 3 4 5 6 7 8 9 10	93 266 196 292 458 392 458 3152 101 104	3 7 5 10 6 12 5 8 4 3 3 3	3 10 2 -2 -14 -4 -8 7 24 10 14 -1 0	10 12 3 -16 -15 -14 -12 -12 -11 -10	1, K=         1 46         164         164         1, K46         164         1, K46         1, K46     <	0 • 18 48 4 1 4 3 3 4 9 8 6	18 -2* 1 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -40 1*	-4 -3 -2 -1 0 1 2 3 4 5 6 7 8	770 3340 3342 3345 365 450 309 309 309 180	20 9 9 10 9 10 13 10 8 5	3 5 6 9 5 9 5 6 9 5 9 6 3 7 8 6 4 6 - 1 9 6 3 7 8 6 4 6	15 -15 -14 -12 -12 -11 -10 -7 -5	54 1, K= 127 220 311 220 311 303 150 274 86	4193563848472	-5 7 -6* -1* 0 4 19 8 0 -9 -13
151 0 1234567890 10	111 128 297 2297 656 297 656 297 3482 277 82	340,5 88178199573	1 -2 3 -3 -3 -5 -5 -5 -2 -2 -5 -2 -5 -2 -2 -5 -2 -5 -2 -2 -2 -2 -2 -2 -3 -5 -5 -5 -5 -5 -2 -2 -2 	14 0 1 2 3 4 5 6 7 8 9 10 1	93 = 298 298 = 298 392 458 3152 101 104 99	3 7 5 10 6 12 5 8 4 3 3 3 3 3	3 10 2 -2 -14 -4 -8 7 24 10 14 -1 0 3	10 12 3 -16 -15 -12 -12 -12 -12 -12 -10 -9	1       46         1       46         1       64         1       64         1       64         1       67         3       17         5       15	0 18 48 41 43 3 49 8 63	18 -2* 7* -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3 -3	- 43 - 21 - 21 - 23 4 5 6 7 8 9	7740 3344 3442 345 345 30 30 30 30 20 30 20 30 20 50 50 50 50 50 50 50 50 50 50 50 50 50	20999 99109910 103108856	3 569 5963786461 - 1963786461	15 -154 -154 -12 -109 -76 -4	54 1,18 127 220 315 150 274 376 376	41935638484720	-5 7 -6* -1* 0 4 19 8 0 -9 -13 1 -17
151 0123456789011 11	111 128 297 2297 6297 206 2970 206 2970 206 2970 206 2970 206 2970 2070 2070 2070 2070 2070 2070 2070	340,5 88787995736	1 -2 34 -35 -36 -53 24 10 -53 24 53 24 53 24 53 24 53 21	14 0 1 2 3 4 5 6 7 8 9 10 12 112	93 = 293 295 = 292 392 = 392 458 9 3152 9 101 997 167	3 9 7 5 10 6 12 5 8 4 3 3 3 3 4	3 10 2 -2 -14 -4 -8 7 24 10 14 -1 0 3 -1	-16 -15 -15 -132 -10 -10 -10 -10 -10 -10 -10 -10 -10 -10	1       4         1       4         1       6         1       6         1       6         1       6         1       6         1       6         1       6         1       6         1       6         1       7         1       1         1	0 18 48 41 43 349 86 33 13	18 -2* 7* -3 -3 -9 -3 -9 -3 -9 +40 + 3 6	-43-21 -101234567890	770 333 334 530 530 530 530 50 50 50 50 50 50 50 50 50 50 50 50 50	2099910991031088566	3 569 59637864610 - 19637864610	15 -15432109876543	54= 54 1 23 220 3151 276 376 376 28	419356384847202	-5 7 -6* -1* 0 4 19 8 0 -9 -13 1 -17 9
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3	40.2	10	-14	5	30	3	-2	14	158	4	-0	5	445	11	20	-2	156	4	-3
4	213	6	-1	7	211	5	-7	1	H, K=	2	, 2	6	235	6	23	-1	445	11	- 32
5	305	8		8	90 200	3	-3	-16	116	3	-4	7	278	7	11	0	75	2	-17
7	153	- 4	24	10	38	- 4	-4	-14	173	5	-7	9	273	7	29	2	131	3	-3
8	214	6	18	11	153	4	-8	-13	128	4	1	10	110	3	7	3	256	7	1
9	94	3	4	- 0	H g K≅	1,	15	-12	239	6	9	11	273	7	7	4	228	Ē	3
11	126	3	0	-8	141	<b>4</b> 3	-2	-11 - 10	275	7	15	12	225	5	-3	6	263 195	5	-10 2
12	114	3	-1	-7	111	3	-1	-9	180	5	-2	14	116	4	Q	7	399	10	20
13	148	4	5 . 11	-0	145	4	-2	-0	295	10	U 5	15	154	4	5 6	9	145	J Q	13
-13	151	4	-1	-4	148	4	2	-6	488	12	-9	-15	129	4	-3	10	87	3	-4
-12	44	3	1	-3	136	4	-1	-5	289	7	-35	-14	41	3	0	11	162	4	-5
-11	155	2	-9 2	-1	143 229	4 5	3	-4	538 189	14	26	-13	214	6	-1 -2'	► 13	101 98	3	-5
-9	165	4	-0	0	119	3	2	-2	138	4	-39	-11	345	9	7	14	89	3	4
-7	298	3 8	-1	1 2	242	ь З	2	-1	185	5 5	-20	-10	357	4	4	-14	1,K# 143	21	, 10 -1
-6	159	4	9	3	157	4	5	1	22€	6	29	-8	74	2	-7	-13	83	3	3
-5	389	10	31	4	127	3	-3	2	421	11	25	-7	255	7	-7	-12	144	4	-4
•4	150	4	14	5	121	4	-5	5	305	8 1 1	-24	-5	48 268	2	-25	-11	123	4 5	3 1
-2	68	ź	7	7	157	. 4	-4	5	350	ġ	4	-4	43	2	-5	-9	136	4	-4
-1	267	7	-5	. 8	92	3	2	E	387	10	-11	-3	520	13	-26	- 8	265	7	17
U 4	14	5 7	2'	- 9	1/5 H_¥-	5 1.	-1	/ 8	59 388	2	-8 17	-2	55	2	-32	-/	105	2 1 N	7 1 R
Ż	106	3	8	-6	179	5	2	9	105	3	2	Ō	156	-4	-1	-5	220	6	3
3	350	9	21	-5	54	3	6	10	329	9	51	1	465	12	-21	- 4	293	8	-0
4	234	6	13	-4	184	5	-5	11	212	5 F	5	2	5 21. 2	12	0' - + -	3	177	5 =	-1 -E
7 6	192	5	39 7	-3	127	э З	-5	12	188	2 5	10	5 4	340	4	10	-2	140	3	-5
7	221	6	3	-1	50	3	-5	14	144	Ĺ	-6	5	343	g	0	<u> </u>	212	E	-10

L	F08	SG	DEL	L	F08	SG	DEL	L	FC8	SG	DEL	L	FOB	SG	DEL	L	F08	SG	DEL
1	146	4	0	6	190	5	0	11	274	7	5	2	537	14	1	- 2	252	E	-16
2	334	9	-12	7	89	3	-7	12	96	3	-3	3	324	8	-7	-1	140	4	-2
3	184	5	-7	8	198	5	-6	13	152	4	0	4	461	12	8	0	264	7	-3
- 4	377	10	8	9	79	3	2	14	58	3	-4	5	82	3	- 8	1	229	E	-1
5	161	4	11	,	H • K=	21	10	15	101	4	-2	5	384	10	9	2	140	4	-2
07	289		20	-0	1 51	5	-1	-16	19 K= 4 71	31	, 3		270	13	27	3 4	339	у 1	-2
Ŕ	195	5		-1	58	3	-8	-15	126	3	-2	ă	76	2	12	5	278	7	16
ă	124	3	5	-5	157	ŭ	-5	-14	174	5	-1	10	234	6	2	6	239	E	16
10	142	4	-2	-4	77	ż	2	-13	127	- 4	-3	11	103	3	2	7	170	4	6
11	106	3	4	-3	120	3	-5	-12	154	4	6	12	198	5	- 0	8	258	7	-11
12	173	5	-8	-2	118	3	-0	-11	134	4	24	13	102	3	1	9	152	4	2
13	93	3	-3	-1	113	3	-4	-10	145	4	8	14	165	4	5	10	154	4	1
•	1, K=	21	, 12	0	140	4	-1	-9	224	6	-12	+	1•K=	3,	. 7	11	164	4	1
-12	155	4	-6	1	142	4	-8	-8	369	9	-2	-15	25	6	2*	12	112	3	-0
-11	39	3	7	2	102	3	5	-/	363	9	-12	-14	142	4	•0	13	130	4	-7
-14	194	2	-3		104	2	-7	- 5	412	10	-13	-13	36	- 4		_ 4 7	464		
-9	196	13	-6	5	165	5	-2	-3	333	7	-22	-11	23	5	 	-12	24	7	 
-7	45	3	2	6	107	3	- 2	-3	329	8	-24	-12	338	ģ	17 .	-11	164	<u> </u>	-6
-6	252	6	-1	Ž	115	3	3	-2	85	3	-16	-9	17	12	ġ#,	-10	23	É	Ŏ+
-5	85	3	8	•	H . K=	2,	18	-1	513	13	12	-8	248	6	10	-9	200	5	-2
-4	295	8	14	-3	129	4	-3	0	246	6	-0	-7	30	3	2	- 8	102	3	5
-3	7	13	2*	-2	0	16	-11*	1	400	10	6	-6	246	6	-7	-7	260	7	6
-2	320	8	27	-1	119	3	0	2	497	13	-13	-5	121	3	2	-6	196	5	8
-1	80	2	-9	0	0	21	-24	3	242	6	-19	-4	350	9	-9	-5	283	7	20
0	245	6	29	1	146	4	-3	4	481	12	15	-3	198	5	-4	-4	174	5	3
1	2.5	5 E	10	2	. 31	11	-2-	' ] 6	250	10	-8	-2	543	13	-24	-3	249		14
2	190	フル	24	_ 4 6 '		31 7	- a	7	261	10	24	-1	461	42	-26	-1	250	7	16
4	201	5	5	-15	156	4	-6	8	153	4	-1	1	103	3	+0		79	2	- 8
5	115	3	. 4	-14	76	3	ĩ	9	196	5	30	2	290	7	-16	1	249	Ē	19
6	214	6	-7	-13	269	7	-7	10	228	6	8	3	131	3	7	2	138	4	13
7	29	4	1	-12	68	3	2	11	171	4	-1	4	256	7	-5	3	308	8	24
8	215	6	-8	-11	332	9	25	12	242	6	- 8	5	118	3	-9	4	134	4	13
9	47	3	5	-10	40	4	-6	13	162	4	1	6	365	9	6	5	288	7	11
10	174	5	-6	-9	385	10	-5	14	164	4	4	7	42	12	11	5	58	2	3
_ <b>+</b> +	22	0	3-	-7	140	40	-46	- 4 6	19 N=			0 0	440	4 /	1.2	, i 1	217	6	-0
_ 4 4 <sup>'</sup>	1, 5 2	21	- 14	-/	407	10	-15	-10	70	4 7	-3	10	281	7	-6	q	179	Ę	-11
- 1 0	176	5	-0	-5	415	10	-31	-14	166	5	-5	11	37	10	1*	10	53	3	2
-9	103	3	2	-4	12	13	-47	-13	49	6	3	12	133	4	-12	11	180	5	-6
-8	160	4	ī	-3	495	13	-22	-12	230	7	-1	13	16	20	-14*	ŀ	1,K=	3,	13
-7	86	3	-2	-2	501	13	27	-11	43	3	6	•	1,K=	3,	9 •	-12	61	3	7
-6	110	3	1	-1	3 52	9	-38	-10	278	7	27	-14	90	3	-3 -	-11	169	5	-2
-5	93	3	2	0	267	7	15	-9	72	2	1	-13	121	3	4 .	-10	78	3	-1
-4	144	4	-7	1	538	14	39	-8	369	9	-1	-12	150	4	0	- 9	163	4	-5
-3	148	4	4	2	383	10	40	-/	212	2	-2	-11	123	J	-2	- 5	4 1. 5	4	- 7
-2	1294	0	-15	5	295	/ p	-23	- 5 - 5	394	10	• U 0	-10	231	0 4	- 7	- /	140	4	-3
-1 -1	200	4	-10		532 572	12	2J 21	- 7	294	10	-7	-7	232	4	16	- 5	212	4 <b>7</b>	-3
1	Q3	3	-17	9 6	Q I F	3	12	-3	30	2	-20	-7	215	6	10	- 4	33	3	2
2	210	5	<b>-1</b> 1	7	578	15	22	-2	419	11	-34	-6	193	5	-1	- 3	268	7	-7
3	58	3	0	8	16	18	34	· -1	16	4	24	-5	248	6	-5	-2	120	3	-4
- 4	165	4	õ	9	478	13	58	Õ	531	14	•9	-4	145	4	-12	-1	280	7	-11
5	67	3	-1	10	90	3	8	1	197	5	13	-3	184	5	6	0	88	3	-3

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L	F08	SG	DEL	L	FOB	SG	DEL	L	FCB	SG	DEL	L	F08	SG	DEL	L	F08	SG	DEL
1 2	226	6	-8	12 <b>*</b> 14	154	4	-1	5	443	11	8 -3	-1	417	11 6	-20	23	274	7	-4
3	188	5	-13	 	4.14	4.	2	7	234	ĥ	16	1	233	6	-6	4	217	ŝ	- 8
ŭ	36	2	11	-16	114	3	-1	Å	66	2	1.0	2	244	ĥ	-0	5	45	10	-0 4
5	183	5	-8	- 15	105	3	-1	ğ	156	4	19	3	191	5	- 6	5	168	- U -	
6	80	ź	4	-14	137	4	-6	10	124	3	-1	4	135	- í	3	7	53	2	
7	199	5	-7	-13	111	3	ā	11	207	5		5	286	7	1 5	8	190	Ē	-4
	90	3	-6	-12	198	5	- 5	12	157	4	-1	6	68	2	12	ğ	27	Ĩ.	
ġ	174	5	-8	-11	61	2	11	13	169	5	3	7	316	8	-5	10	164	-	-5
19	31	6	-8	*-10	235	6	- 4	14	103	3	-2	8	77	3	-5		4.K=	4.	14
H	I, K=	3,	15	-9	127	3	-1	I	H, K=	4,	, 6	- ĝ	243	6	-3	-10	136	4	Ō
-9	128	4	4	-8	245	6	-9	-16	18	8	1*	10	111	3	1	-9	67	3	-1
-8	106	3	-2	-7	301	8	-8	-15	116	3	-1	11	126	3	-7	- 8	136	4	1
-7	100	3	-2	-6	216	6	-25	-14	19	6	12*	12	97	3	1	-7	58	2	1
-6	116	3	3	-5	224	6	-13	-13	169	4	-3	H	1, Ks	4,	10	- 6	159	4	2
-5	112	3	0	-4	479	12	-31	-12	26	- 4	4	-14	116	3	-2	- 5	73	3	7
-4	104	3	3	-3	53	2	-9	-11	234	6	6	-13	49	3	-2	- 4	213	E	-2
-3	183	5	2	-2	771	20	13	-10	49	3	3	-12	107	3	-4	- 3	86	3	5
-2	113	3	1	-1	130	3	27	-9	262	7	14	-11	79	<b>、</b> 3	2	- 2	236	3	-4
-1	208	- 5	-2	0	544	14	-2	- 8	76	3	-1	-10	166	4	-2	-1	135	<b>4</b> .	3
0	140	4	-1	1	280	7	- 2	-7	319	8	-3	-9	135	4	-7	0	200	5	2
1	154	4	-3	2	306	8	-18	-6	81	3	-6	-8	238	E	8	1	142	4	8
2	167	4	a	3	406	10	10	-5	420	11	-10	•7	157	-4	- 5	2	143	4	-1
3	98	3	-1	4	319	8	7	-4	53	2	5	-6	272	7	- 27	3	113	3	2
4	150	4	-3	5	285	7	5	- 3	515	13	-16	-5	159	- 4	5	4	148	4	-4
5	126	3	-1	6	361	9	2	-2	80	2	2	-4	191	5	11	5	94	3	-3
6	100	3	-3	7	121	3	-1	-1	562	14	-12	-3	166	4	8	6	180	5	-7
7	153	4	-3	8	239	6	22	0	16	5	14*	-2	163	4	2	7	101	3	3
8	82	3	4	9	85	3	15	1	439	11	0	-1	214	6	0	8	162	4	-5
_	1,K=	3	<b>1</b> 7	10	190	5	10	2	25	Z	6	0	275	7	7		H <b>, K</b> ≝	4	15
-0	151	4	-4	11	103	4	-5	5	31/	12	2	1	197	10	1	- 3	4 4 4	5	-0
	27		<u>د</u>	12	114	2		-	7 4 9	12	- <u>+</u> ·	-	383	10	10	- 1	141		5
- 7	142	4	-4	13	121	3	U 1	2	310	0	-4	3	180	2	12	-0	01	3	-2
-3	40	37	-7	14	140	- <b>4</b> 1.	-1	C 7	36	2	26	- 4 E	475	3	20		140	7	-2
-1	31	5	-3 n	¥= 15	79 8=	- 44		Ŕ	347	2	20 1 <b>7</b> ¥	5	188	- <b>4</b>	1	- 3	105	2	-4
- <b>-</b>	424	7	-6	-45	170		-2	<u>a</u>	290	7		7	200	7	2	- 3	4 2 2	7	
1	43	4	-2	-15	100	3		10	38	3	-0	Å	143	5	- F	- 2	1 0 9	3	-3
2	167	-	-8	-13	141	6	-9	11	168	4	-5	ă	107	3	- U - K	-	82	3	2
3	60	3	1	-12	26	5	34	• 12	65	3	5	10	175	5	-ğ	ī	150	Ă	-3
4	175	5	-4	-11	146	4	18	13	1 32	4	-7	11	94	3	-3	2	54	3	1
	1, K=	4,	, İ	-10	125	3	- 5		H,K=	- <u>4</u>	8	+	1.K=	4,	12	3	168	5	-1
-16	119	3	-4	-9	229	6	-11	-15	88	3	-5	-12	125	3	- 0	4	71	3	6
-14	193	5	-3	-8	261	7	-9	-14	78	3	2	-11	20	7	-74	► 5	123	3	1
-12	324	8	7	-7	376	10	-19	-13	137	4	5	-10	145	4	-5	ł	1.K=	5.	, 1
-10	311	8	-11	-6	347	9	2	-12	81	3	-2	-9	1.7	11	24	-16	47	3	-2
-8	322	8	-12	-5	424	11	-16	-11	238	6	-3	-8	167	.4	-4	-15	112	4	-7
-6	298	8	-1.4	-4	199	-5	-19	-10	60	4	-3	-7	88	3	1	-14	38	3	-6
-4	510	13	-64	-3	494	13	-11	-9	253	6	13	-6	213	6	-5	+13	208	5	-8
-2	698	18	-65	-2	171	- 4	-26	- 8	106	3	17	-5	75	3	- 0	-12	18	22	-5*
0	561	14	-22	-1	361	9	-21	-7	182	5	9	-4	229	6	5	-11	265	. 7	17
2	421	11	1	. 0	331	8	2	-6	161	-4	-4	- 3	10	17	84	-10	16	14	5*
4	418	11	16	1	477	12	-16	-5	227	6	-10	-2	270	7	18	- 9	211	6	-12
6	634	16	15	2	346	9	0	-4	153	4	-9	-1	21	4	11		127	4	4
8	475	13	45	3	560	14	15	-3	550	9	-7	Q	510	8	11	• /	249		-15
	つく ア		- 40		777	7	_	- 7	4 1.7		_ 4	-		<b>.</b>	7			-	-15

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_L	F08	SG 10	DEL -30	L -11	F 08	S5	DEL	L -13	F 08 64	SG 3	DEL	L -2	F08	SG 3	DEL	-12	F08	SG	DEL
-4	81	2	- 00	-10	200	5	21	-12	1.01	3	-2	-1	244	6	-5	-11	86	3	2
-3	701	18	-40	-9	124	3	12	-11	104	4	-3	ō	86	3	ī	-10	195	5	17
-2	49	2	3	-8	264	7	-9	-10	150	4	-9	1	201	€	-5	- 9	154	4	4
-1	599	15	-20	-7	195	5	1	-9	206	5	-6	2	9	15	- 74	8	203	5	-14
0	70	2	-5	-6	366	9	-27	-8	140	4	3	3	166	5	-3	-7	222	Ę	- 24
1	447	11	-7	-7	100	4	-25	-6	475	ſ	14		402	4	-1	-0	200		-21
2	135	3 1 0	-/	-4	409	13	-23	-0	100	25	20	7 6	192	23	2	- 7	140	4	-5
4	67	2	-6	-2	481	12	-22	-4	241	6	7	7	195	5	a	- 3	204	5	-3
5	416	11	9	-1	85	2	-5	- 3	118	3	. 8	. 8	54	3	-3	- 2	330	ģ	-3
6	55	2	-5	0	364	9	-20	-2	245	6	-2	ŧ	1 <b>,</b> K=	51	, 15	-1	267	7	-8
7	372	10	27	. 1	224	6	1	-1	202	5	3	-9	92	4	-3	0	332	9	-21
8	23	15	104	2	385	10	6	0	247	6	2	-8	119	3	4	1	264	7	-3
9	203	5	12	3	505	5	2	1	298	8	9	-7	92	3	-1	2	384	10	1
10	44	5	3	4	362	7	2	2	231	6	12	-0	122	3 6		3	207	3	-1
11	173	7		7	77	2	20	3	275	6	42	-7	132	7	-2		231	3	7 6
13	141	4	-2	7	43	3	-6	5	133	4	8	-3	184	Š	-1	6	275	7	23
	1.K=	5	3	8	257	7	15	6	173	4	-2	-2	94	3	- 1	7	52	2	11
-16	103	3	1	9	68	2	-2	7	85	3	0	-1	153	4	4	8	256	7	2
-15	84	3	2	10	196	5	-2	8	148	4	-1	0	125	4	3	9	92	3	-7
-14	95	3	-0	11	119	3	2	9	126	3	-3	1	89	3	3	10	177	5	-6
-13	96	3	1	12	151	4	1	10	117	3	1	2	118	3	-5	11	145	4	-2
-12	117	3	-1	13	89	3	3	11	151	4	-1	5	83	37	1	12	121	5	-7
-11	149	- 4	14	- 1 6	79K₩ 20	<b>71</b>		-4 7	19 K⊒ 04	71 2	4		128	3 7	-1	13	03 4.Ka	 	
-1u	191	5	-13	-12	134	4	-4	-13	77	3	-2	6	89	3	- 4	-16	79	3	, i
-8	220	6	-8	-13	38	3	-2	-7	227	6	-6	Ť	1,K=	5	17	-15	117	3	-0
-7	234	6	-7	-12	187	5	-3.	-6	70	3	-0	=4	114	3	1	-14	80	3	+2
-6	306	8	-4	-11	54	· 3	8	-5	236	6	9	-3	51	3	8	-13	153	4	-6
-5	299	8	-23	-10	219	6	-0	-4	45	4	8	-2	105	3	3	-12	54	2	-2
-4	348	9	-19	-9	53	2	7	-3	197	5	19	-1	50	3	-1	-11	196	5	-2
-3	317	0	-14	-0	19/	2	13	-2	262	2	47	U A	120	4	- 2	-10	102	J	4
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12	173	5	-2	7	93	3	<b>4</b>	-10	28	7	24	* 8	317	8	21	5	220	6	21
13	122	3	-3	8	275	7	-6	-9	140	4	1	10	155	4	-1	6	109	3	15
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-12	41	3	3	-11	66	2	-3	1	59	3	-3	-7	199	5	-2		165	6	5
-11	220	6	-10	-10	135	4	1	2	104	3	-1	-6	162	4	-8	-7	29	-	14
-10	15	18	0#	-9	91	3	-3	3	59	3	-2	-5	- 97	3	+2	- 6	212	6	20
-9	232	6	14	-8	230	6	-1	4	157	4	-2	-4	38	2	3	- 5	53	3	12
-8	51	3	-3	-7	102	3	-0	5	83	3	- 2	-3	68	2	-4	-4	301	8	7
-7	237	6	5	-6	277	7	5	6	180	5	-4	-2	194	-5	2	-3	66	3	6
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-10	145	4	-3	-4	192	5	-5	-2	138	4	-3	-5	65	3	5	-3	130	3	13
-9	149	4	1	-3	60	2	-1	-1	351	9.	-15	-4	208	5	-13	-2	169	4	18
-8	175	5	-2	-2	200	5	-10	0	78	2	- 7	- 3	45	2	-1	-1	164	4	15
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-2	121	3	6	4	200	5	-3	6	11	16	24	3	118	3	6	5	99	3	1
-1	284	7	-0	5	- 11	14	-14	۲ ۲	350	9	7	4	310	8	29	6	174	5	-3
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-3	167	4	-4	10	149	- 4	-4	10	119	4	-5	-10	103	3	2	-11	133	3	-5
-2	34	3	-2	-15	1,K#	- <b>5</b> ,	2	-16	4 0 E	8	, 5	-9		5	-3	-10	1 70	3	-7
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- <b>4</b>	140	2	-9	-10	180	5	5	-10	166	5	-5	-2	178	5	-3		240	5	5
2	473	ž	- 3	- 10	153	4	2	- 3	51	-	-5		86	ź	-2	- 2	56	2	, k
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-9	111	3	1	-4	235	6	-11	-3	260	7	12	4	117	3	-6	3	288	7	12
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-6	34	3	4	-1	181	5	-1	8	29	4	-4	7	76	3	-4	6	24	8	-10*
-5	166	4	-1	0	212	6	-5	1	237	6	27	. 8	135	4	-1	. 7	161	4	-5
-4	68	2	6	1	220	6	-4	2	49	2	8	÷	1,K=	8,	12	8	76	3	0
-3	173	5	-2	2	214	6	5	3	28E	7	10	-11	13	15	-51	<u>e</u> 9	132	3	-1
-2	41	3	6	3	161	4	12	4	0	21	-34	-10	128	4	5	10	55	3	1
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-3	127	- 4	-5	-11	154	4	-3	- 8	78	3	Ž	- 4	160	-4	_ i	- 3	200	5	10
-2	77	4	3	- 10	103	3	-2	-7	157	4	-5	5	45	4	5	- 2	159	4	5
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-16	93	3	-0	-3	168	4	-8	9	187	5	2	-4	148	4	1	5	91	3	1
-14	133	4	2	-2	130	3	7	1	124	4	4	-3	64	3	6	6	86	2	-0
-12	184	5	-7	-1	248	6	-3	2	180	5	-1	-2	133	4	-1	7	84	3	-3
-10	196	5	-9	0	156	4	8	3	177	5	4	-1	41	5	2	8	129	3	1
<b>6 –</b>	171	4	. 4	1	255	7	15	4	93	3	-1	J	109	3	5	9	110	5	->
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-9	46	25	-5 -4	01	116	35	-5	-11	59 118	23	6 2	-2	34 212	35	-7	0	130	4	-1
-7	69	2	-5	2	113	3	-2	-9	81	2	4	0	55	2	-3	2	125	3	3
-6	253	6	9	. 3	123	3	3	-8	171	4	-2	<u> </u>	177	5	-3		H,K=	11,	, 1
-5	69	2	-2	4	128	3	-2	-7	66	3	5	2	22	4	2	-14	24	6	-5*
-4	201	2	12	2 6	129	. 3. 4.	·•u	-0	227	2	5 10	5	152	4 Q	-1	-15 F-12	88 32	3	- <u>4</u> र
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2	205	5	4	-9	132	4	5	0	176	5	6	-12	45	2	3	-7	142	4	-6
3	33	3	-0	-8	68	3	2	1	145	4	6	-11	80	3	-3	- 6	22	5	<u>4</u> *
4	181	5		-7	118	3	1 2	2	179	5	-6	-10	- 73	2	3	-5	180	5	-10
- 6	151	- 4	-4	-5	107	-3	-4	4	171	 	-3	8	88	3	2 - 0	- 3	159	- 3 - 4	-10
7	49	2	-2	-4	30	3	-3	5	64	2	-1	-7	104	3	1	- 2	60	Ż	2
8	138	4	-5	-3	152	4	5	6	129	3	-2	-6	. 80	2	-6	-1	137	4	-4
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-13	13	16	2*	1	160	4	-5	-14	25	-4	4	-2	87	3	3	3	189	5	-6
-12	109	3 E	1	2	50	3	-2	-13	69	3	-2	-1	133	4	-3	4	45	3	0
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-9	26	3	4	5	131	3	-1	-18	.74	3	-1	2	69	2	- 0	7	113	4	-5
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-6	208	5	-3	-8	127	8 3	97 6		167	5	-7	4	52 158	5	-2	-13	51 69	2	2
-5	54	4	6	-6	32	3	9	-6	74	3	2	5	53	3	-1	-11	84	3	1
-4	251	6	-2	-5	147	4	3	-5	216	6	-1	· • •	1,K=	10,	10	-10	89	3	5
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1 2	51	2	-2	0	22	5	114	P :0	157	4	2	-7	60	3	-3	-5	113	3	1
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4	213	5	1	3	117	3	-0	3	143	4	-1	-4	110	3	2	- 2	111	3	-2
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-12	100	3	-0	-6	202	6	5	-13	H <b>, K</b> ≡ 01	10	, 6	2	125	3	3	4	89	3	-0
-10	92	3	-5	-2	200	5	4	-12	21	13	-13#		97	3	-1	6	84	3	-2
-9	101	3	2	Ō	243	6	9	-11	102	3	2		1,K=	10,	12	7	95	3	3
-8	-89	3	-5	2	228	6	-1	-10	17	7	4*	-8	110	3	1	<mark>.</mark>	H,K=	11.	5
-7 -6	81 103	23	-2	4	225	5	-/ -7	-9 -8	132	3 10	-0 5+	-7	15	73	1	-13	17 99	3	-5+ -2
-5	77	3	-3	8	116	3	-5	-7	172	4	-8	-5	16	7	134		42	3	-3
-4	161	4	-2	Ī	H,K=	10,	2	-6	40	3	6	-4	128	4	-2	-10	123	3	-2
-3	128	3	-4	-14	71	3	0	-5	201	5	-12	-3	12	13	64	-9	41	3	-4
-2 -1	160	45	- U - D	-13 -12	43 79	5 2	2 - 0	-4	36 219	7 6	-10	-2 -1	154 34	43	-0 -3	-8 -7	152 22	45	-6

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#### STRUCTURE FACTORS CONTINUED FOR YTTERBIUM BIS (C5ME5) DITHIODIETHYLVARBAMATE

L	FOB	SG	DEL	L	F 08	SG	DEL	L	F 08	SG	DEL	L	FOB	SG	DEL
-6	142	4	-7	0	39	4	-7	-6	9	14	5*	-2	92	3	3
-5	11	15	- 1+	1	118	3	3	-5	99	3	-1	-1	97	3	4
-4	157	4	-/	1	1, 64	12,		-4	U C	17	-4-	U	74	57	1
-3	20	2	=u =6	-10	94	3 7	-1	-2	41	45	1	1 2	91 47	3 4	-2
-2	102	7		-10	33	3 7		- 4	14 00	12	- <u> </u>	2	79	7	-2
<u> </u>	161	4	-0	-6	119	3	-5	ā	8	15	-0*	J.	•Ks	13.	5
1	42	2	-6	-4	149	4	1	1	128	4	0	-10	69	3	3
Ē	147	4	-1	-2	110	3	Ē	2	14	15	5*	-9	21	8	- 9#
3	15	7	-6*		100	3	-6	3	148	4	-2	- 8	80	3	5
4	136	4	-3	2	144	4	-2	4	8	17	3#	-7	36	5	2
5	33	3	-6	4	162	5	-2	ł	<b>1, K</b> ≠	12	, 8	-6	73	3	-9
6	118	3	-4	ŀ	1,K=	12,	2	-9	78	3	3	-5	18	11	-5*
F	1, K=	11,	7	-12	80	3	-Z	-8	45	3	9	-4	96	3	1
-12	84	3	3	-11	58	3	5	•7	99	S		-3	17	1(	- 3 <b>-</b>
-11	27	4	3	-10		<b>3</b>	-U 5	-0	40	2	0	-2	107	3	- U
-10	77	37	2	- 9	01	*	2		32	37	0	-1	447	4	1 - 4
-9	117	3	. <u> </u>	-7	92	3	- t	-3	75	3	-0	1	29	5	-4
+7	55	3	2	-6	118	3	2	-2	61	3	2	2	121	3	-4
-6	129	3	11	-5	62	2	5	-1	71	3	-4	<u></u> н	,K=	13.	7
•5	58	3	2	-4	123	3	2	0	49	3	0	-8	86	3	5
- 4	124	3	5	-3	79	3	6	1	97	4	-0	-7	18	9	5*
-3	23	4	1*	-2	100	3	-3	2	38	.6	-5	-6	105	3	. 9
-2	112	3	0	-1	74	3	5	1	1, K=	12	, 10	-5	17	12	6*
-1	0	15	-5*	. 0	113	3	-3	-6	60	3	2	-4	86	3	4
0	102	3	-5	1	52	. 3	3	-5	45	18	-10*	-3	31	4	.3
1	11	14	67	2	129	4	-5	-4	59	4	-4	-2	74	· 3	3
2	137	4	-3	3	44	4	-1	-3	tu	5	-2	-1	25	2	- 4
3	4 8 2	ſ	-7	- 4 - E	133	- 4- 7		-1	- 3C	3 7	-7	U 	03	44.	1
- 4	172	<b>4</b>	-3		27 J.K.	12.	-0			17.		- R	404	179	4
	1.Ks	11.	9	-12	55	3	· •	-11	76	3	-1	-6	94	ž	-5
-10	61	3	-1	-11	75	3	-5	-10	34	- 4	5	-4	89	3	-5
-9	79	3	-1	-10	58	3	1	-9	91	3	1	-2	87	3	-2
-8	65	2	-2	-9	87	3	-1	- 8	32	5	6	0	91	3	-1
-7	78	3	2	-8	41	3	1	-7	103	3	1	H	,K=	14,	2
-6	73	3	-1	-7	88	3	-2	-6	36	5	· 3	-8	66	3	-3
-5	72	3	4	-6	33	3	10	-5	112	3	0	-7	42	3	3
-4	92	3	2	-5	93	3	-Z	-4	44	3	2	-6	74	3	0
-3	80	57		-4	55	2	5	-3	34	5	-2	-7	52	37	-2
-1	***	3	-1	-3	56	2	-9		4 0 0	7	-2	-7	50	7	- 2
-1	116	3	-1	-1	113	5	-3		22	6		-3	98	3	-1
1	87	3	-1	<u> </u>	78	3	2	1	1 10	3	-4	-1	54	4	3
2	122	3	ī	1	122	3	-1	2	23	8	8*	ō	87	3	2
3	65	3	-1	2.	72	3	-2	3	100	4	-3	H	•K=	14.	4
ŀ	1, K=	11,	11	3	111	3	-3	1	H• K=	13	, 3	-7	51	6	-2
-8	28	4	2	4	57	3	1	-10	57	3	3	-6	38	3	-1
-7	90	3	-0	5	114	3	-4	-9	56	3	1	-5	74	3	1
-6	25	4	-1	<b>ł</b>	1. K=	12,	6	-8	59	3	5	-4	44	3	2
-5	89	3	-0	-11	90	3	-1	-7	58	3	5	-3	93	3	-6
-4	56	3	-3	-10	19	7	-24	- 6	50	5	=U 	-2	21	4	1
- J - 2	105	5	-2	= y _ R	99	5 15	-2	-7	25 88	3	5 6				
-4	125	3	-v 7	-7	4 0.0	75	-2	-7	70	য	- 2				
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