

Table 2. Selected bond distances (Å) and angles (°) with e.s.d.'s in parentheses

Ni1—Br1	2.339 (2)	Ni2—P3	2.313 (3)
Ni1—P1	2.306 (3)	P2—C15	1.823 (10)
P1—C1	1.824 (11)	P2—C21	1.830 (10)
P1—C7	1.792 (10)	P2—C27	1.843 (11)
P1—C13	1.833 (11)	C27—C28	1.509 (15)
C13—C14	1.518 (16)	P3—C29	1.809 (10)
Ni2—Br2	2.350 (2)	P3—C35	1.823 (10)
Ni2—Br3	2.362 (2)	P3—C41	1.848 (10)
Ni2—P2	2.316 (3)	C41—C42	1.529 (15)
Br1—Ni1—Br1 ¹	122.68 (11)	Br3—Ni2—P3	112.81 (10)
P1—Ni1—P1 ¹	102.94 (16)	Ni2—P2—C15	111.5 (3)
Br1—Ni1—P1	104.98 (9)	Ni2—P2—C21	112.0 (3)
Ni1—P1—C1	113.3 (3)	Ni2—P2—C27	120.1 (3)
Ni1—P1—C7	112.3 (3)	C15—P2—C21	104.6 (5)
Ni1—P1—C13	117.7 (4)	C15—P2—C27	104.1 (5)
C1—P1—C7	104.2 (4)	C21—P2—C27	103.1 (5)
C1—P1—C13	104.4 (5)	Ni2—P3—C29	111.8 (3)
C7—P1—C13	103.6 (5)	Ni2—P3—C35	112.8 (3)
Br2—Ni2—Br3	114.86 (7)	Ni2—P3—C41	119.2 (3)
P2—Ni2—P3	98.73 (12)	C29—P3—C35	105.0 (5)
Br2—Ni2—P2	113.43 (9)	C29—P3—C41	102.7 (4)
Br2—Ni2—P3	108.15 (10)	C35—P3—C41	104.0 (5)
Br3—Ni2—P2	107.80 (10)		

Symmetry code: (i) $-x, y, \frac{1}{2} - z$.

is missing since only a unique data set was collected. The structure was solved by direct methods (*MULTAN80*: Main, Fiske, Hull, Lessinger, Germain, Declercq & Woolfson, 1980) and subsequent $\Delta\rho$ maps. The hydrogen positions in the CH₃ groups were located in $\Delta\rho$ maps while those in the CH and CH₂ groups were calculated. Nonhydrogen atoms were refined anisotropically. The hydrogen atoms were assigned the fixed isotropic displacement parameter 0.070 Å²; no hydrogen parameter was refined. Atomic scattering factors were taken from *International*

Tables for X-ray Crystallography (1974, Vol. IV). The system of computer programs is described by Lundgren (1982).

Anisotropic displacement factors, H-atom positions and lists of observed and calculated structure factors with e.s.d.'s have been deposited with the British Library Document Supply Centre as Supplementary Publication No. SUP 54656 (25 pp.). Copies may be obtained through The Technical Editor, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England. [CIF reference: AL1000]

References

- Bellon, P. L., Albano, V., Bianco, V. D., Pompa, F. & Scatturin, V. (1963). *Ric. Sci. Rend.* **33**, 1213–1220.
- Garton, G., Henn, D. E., Powell, H. M. & Venanzi, L. M. (1963). *J. Chem. Soc.* 3625–3629.
- Hayter, R. G. & Humiec, F. S. (1962). *J. Am. Chem. Soc.* **84**, 2004–2005.
- Hayter, R. G. & Humiec, F. S. (1965). *Inorg. Chem.* **4**, 1701–1706.
- Jarvis, J. A. J., Mais, R. H. B. & Owston, P. G. (1968). *J. Chem. Soc. (A)*, 1473–1486.
- Kilbourn, B. T. & Powell, H. M. (1970). *J. Chem. Soc. (A)*, 1688–1693.
- Lundgren, J.-O. (1982). Report No. UUIC-B13-4-05. Univ. of Uppsala, Sweden.
- Main, P., Fiske, S. J., Hull, S. E., Lessinger, L., Germain, G., Declercq, J.-P. & Woolfson, M. M. (1980). *MULTAN80. A System of Computer Programs for the Automatic Solution of Crystal Structures from X-ray Diffraction Data*. Univs. of York, England, and Louvain, Belgium.
- Mari, A., Gleizes, A., Dartiguenave, M. & Dartiguenave, Y. (1981). *Inorg. Chim. Acta*, **52**, 83–85.
- Tolman, C. A. (1977). *Chem. Rev.* **77**, 313–348.
- Ugozzoli, F. (1987). *Comput. Chem.* **11**, 109–120.
- Walker, N. & Stuart, D. (1983). *Acta Cryst.* **A39**, 158–166.
- Watkin, D. J. (1976). *J. Chem. Soc. Dalton Trans.* 1803–1804.

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Acta Cryst. (1992). **C48**, 408

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A list of example requests and their result is given below.

Request	Result
<i>index</i>	Get the list of the files (sizes, and dates of last modification) available to be retrieved.
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Multiple requests may appear on the same line, e.g.

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is equivalent to

```
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send cyclops.src
send quasar.src
```

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The files currently available, with approximate sizes, are:

<i>cifdic.c91</i>	140 kB	Electronic version of CIF Dictionary.
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<i>cyclops.src</i>	15 kB	Dictionary validation program <i>CYCLOPS</i> .
<i>example.cif</i>	31 kB	Example of a CIF submission to <i>Acta</i> .
<i>form.cif</i>	12 kB	Template CIF that may be used for submission to <i>Acta</i> .
<i>quasar.src</i>	33 kB	CIF processing program <i>QUASAR</i> .
<i>request.lst</i>	7 kB	List of the data items searched for within a submitted CIF.