

$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ 1981Ha39,2008Ja01,1980Lo06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen		NDS 185, 2 (2022)	23-Aug-2022

1981Ha39: (pol d,t), E=16 MeV, beam polarization=0.75 from the McMaster University FN tandem Van de Graaff accelerator. $\sigma(\theta)$ and vector analyzing power measured at 11 angles. Uncertainties in relative and absolute σ values were 10% and 20%, respectively. Overall FWHM=10 keV. Authors state that uncertainty in level energy is 2 keV. Levels are reported to an excitation energy of 1797 keV.

2008Ja01: (d,t), E=12.1 MeV beam provided by tandem accelerator at Niels Bohr Institute. Enriched target. Detected charged particles using magnetic spectrograph. Recorded triton spectra at 60, 90 and 125°, and every 5° from 5° to 50°. DWBA analysis of angular distributions. Resolution (FWHM)=12-15 keV. Absolute cross sections are accurate to 20%, and relative cross sections to $\approx 10\%$.

1980Lo06: (d,t), E=17 MeV from the Niels Bohr Institute Tandem Van de Graaff. Measured $\sigma(\theta)$. FWHM ≈ 12 keV. Uncertainty in absolute σ about 15%.

1980Ka24: (d,t γ), E=10 MeV. Measured E_{γ} , $\gamma\gamma$ -coin.

1973Bu02: (d,t), E=12 MeV, measured $\sigma(\theta)$ at 15 angles. Levels reported up to 1311 keV. FWHM=8 keV. DWBA analysis. Uncertainties in cross sections are 10% for relative and 20% for absolute. Comparison with results from 1965Ne12.

1965Ne12: (d,t): thesis, Florida State University.

 ^{149}Nd Levels

Differential cross sections are listed under comments from 2008Ja01, 1981Ha39, 1980Lo06 and 1973Bu02. Values from 1981Ha39 and 1980Lo06 correspond to an angle where cross section is maximum, whereas those from 1973Bu02 are at 60°.

In (d,t γ) (1980Ka24), the $\gamma\gamma$ data reveal 120.3 γ , 165.1 γ in coin with 529 γ and 383.6 γ , 436.5 γ in coin with 165.1 γ . These γ rays connect 165, 286, 548, 813 and 985 levels. Full details of this work are not available in the paper.

E(level) [†]	J π @	L#	S $\ddagger$	Comments
0	5/2 ⁻	3	0.06	L: 3 (1980Lo06,1981Ha39,2008Ja01). S: 0.02 (2008Ja01), 0.08 (1980Lo06). d σ /d Ω (mb/sr)=73 (1981Ha39), 131 (1980Lo06), 27 (1973Bu02). d σ /d Ω (mb/sr)=23 (60°), 8 (90°), 22 (125°) (2008Ja01).
108 2	7/2 ⁻	3	0.36	E(level): 108 3 (2008Ja01), 109 2 (1981Ha39), 108 5 (1980Lo06), 108 2 (1973Bu02). L: 3 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.40 (2008Ja01), 0.48 (1980Lo06). d σ /d Ω (mb/sr)=676 (1981Ha39), 985 (1980Lo06), 292 (1973Bu02). d σ /d Ω (mb/sr)=275 (60°), 141 (90°), 60 (125°) (2008Ja01).
138 2	5/2 ⁻	3	0.22	E(level): 138 3 (2008Ja01), 139 2 (1981Ha39), 138 5 (1980Lo06), 138 2 (1973Bu02). L: 3 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.12 (2008Ja01), 0.20 (1980Lo06). d σ /d Ω (mb/sr)=265 (1981Ha39), 342 (1980Lo06), 81 (1973Bu02). d σ /d Ω (mb/sr)=77 (60°), 35 (90°), 20 (125°) (2008Ja01).
165 2	&	1	0.12	E(level): 165 3 (2008Ja01), 165 2 (1981Ha39), 162 5 (1980Lo06), 165 2 (1973Bu02). L: 1 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.10 (2008Ja01), 0.16 (1980Lo06). d σ /d Ω (mb/sr)=768 (1981Ha39), 817 (1980Lo06), 234 (1973Bu02). d σ /d Ω (mb/sr)=225 (60°), 98 (90°), 36 (125°) (2008Ja01). A 165.1 γ shown in (d,t γ) (1980Ka24) in coin with a 120.3 γ .
192 2	&	(5)	0.10	E(level): 192 2 (1981Ha39), 193 2 (1973Bu02). L: (5) (1981Ha39). d σ /d Ω (mb/sr)=20 (1981Ha39), 17 (1973Bu02).
220 2	9/2 ⁻	5	1.08	E(level): 220 3 (2008Ja01), 221 2 (1981Ha39), 217 5 (1980Lo06), 220 2 (1973Bu02). L: 5 (1980Lo06,1981Ha39,2008Ja01). S: 0.49 (2008Ja01), 1.5 (1980Lo06). d σ /d Ω (mb/sr)=90 (1981Ha39), 186 (1980Lo06), 39 (1973Bu02).

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$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ **1981Ha39,2008Ja01,1980Lo06 (continued)** ^{149}Nd Levels (continued)

E(level) [†]	J ^π @	L [#]	S [‡]	Comments
257 2	3/2 ⁻ &	1	0.04	dσ/dΩ (mb/sr)=27 (60°), 35 (90°), 19 (125°) (2008Ja01). E(level): 256 3 (2008Ja01), 257 2 (1981Ha39), 258 2 (1973Bu02). L: 1 (1973Bu02,1981Ha39,2008Ja01). S: 0.01 (2008Ja01). dσ/dΩ(mb/sr)=216 (1981Ha39), 54 (1973Bu02).
270 2	(7/2 ⁻ ,9/2 ⁺)	3,4	0.26	dσ/dΩ (mb/sr)=26 (60°), 10 (90°), 6 (125°) (2008Ja01). E(level): 268 3 (2008Ja01), 270 2 (1981Ha39), 273 5 (1980Lo06), 271 2 (1973Bu02). L: 3 (1980Lo06), 3,4 (1981Ha39), 4 (2008Ja01). S: 0.22 (2008Ja01). J ^π : (9/2 ⁺) (1973Bu02). dσ/dΩ(mb/sr)=267 (1981Ha39), 417 (1980Lo06), 103 (1973Bu02). dσ/dΩ (mb/sr)=81 (60°), 55 (90°), 20 (125°) (2008Ja01). J ^π : 7/2 ⁻ is favored over 9/2 ⁺ by (pol d,t) data. 1973Bu02 and 1981Ha39 suggest that the behavior of these weakly populated states is being distorted by multistep processes not considered in the theoretical calculations. (9/2 ⁺) in Adopted Levels.
285 2	1/2 ⁻	1	0.06	E(level): 285 3 (2008Ja01), 286 2 (1981Ha39), 283 5 (1980Lo06), 285 2 (1973Bu02). L: 1 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.05 (2008Ja01), 0.07 (1980Lo06). dσ/dΩ(mb/sr)=340 (1981Ha39), 397 (1980Lo06), 98 (1973Bu02). dσ/dΩ (mb/sr)=95 (60°), 46 (90°), 20 (125°) (2008Ja01). A 120.3γ shown in (d,ty) (1980Ka24) in coin with a 165.1γ.
318 2		3	0.66	E(level): 320 3 (2008Ja01), 318 2 (1981Ha39), 319 5 (1980Lo06), 318 2 (1973Bu02). L: 3 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.48 (2008Ja01), 0.79 (1980Lo06). dσ/dΩ(mb/sr)=717 (1981Ha39), 1179 (1980Lo06), 286 (1973Bu02). dσ/dΩ (mb/sr)=302 (60°), 181 (90°), 56 (125°) (2008Ja01). The 316 and 321 levels observed in β ⁻ and (n,γ) are unresolved in this work. See the Adopted Levels for discussion.
333 2	&	2	0.10	E(level): 333 2 (1981Ha39), 332 2 (1973Bu02). L: 2 (1973Bu02,1981Ha39). dσ/dΩ(mb/sr)=192 (1981Ha39), 29 (1973Bu02).
340 2		6	1.14	E(level): 339 3 (2008Ja01), 340 2 (1973Bu02). L: 6 (1973Bu02,2008Ja01). S: from 2008Ja01. dσ/dΩ(mb/sr)=42 (1973Bu02). dσ/dΩ (mb/sr)=10 (60°), 43 (90°), 36 (125°) (2008Ja01).
366 2	&	1	0.16	E(level): 366 3 (2008Ja01), 366 2 (1981Ha39), 365 5 (1980Lo06), 366 2 (1973Bu02). L: 1 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.15 (2008Ja01), 0.19 (1980Lo06). dσ/dΩ(mb/sr)=992 (1981Ha39), 806 (1980Lo06), 296 (1973Bu02). dσ/dΩ (mb/sr)=316 (60°), 137 (90°), 53 (125°) (2008Ja01).
403 2	1/2 ⁻	1	0.04	E(level): 403 3 (2008Ja01), 403 2 (1981Ha39), 402 5 (1980Lo06), 402 2 (1973Bu02). L: 1 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.03 (2008Ja01), 0.06(1980Lo06). dσ/dΩ(mb/sr)=257 (1981Ha39), 268 (1980Lo06), 73 (1973Bu02). dσ/dΩ (mb/sr)=61 (60°), 20 (90°), 11 (125°) (2008Ja01).
447 2		3	0.14	E(level): from 1973Bu02 where it seems resolved from 457 peak. Values are: 447 3 (2008Ja01), 451 2 (1981Ha39, unresolved), 450 5 (1980Lo06), 447 2 (1973Bu02, 447 and 457 resolved). L: 3 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.16 (2008Ja01), 0.22 (1980Lo06). dσ/dΩ(mb/sr)=242 (1981Ha39), 339 (1980Lo06), 82 (1973Bu02). dσ/dΩ (mb/sr)=86 (60°), 57 (90°), 19 (125°) (2008Ja01). E(level): from 1973Bu02 who report partially resolved levels at 447 and 457 with 82% of the cross section associated with the 447 level. They assign L=3 to the composite peak.
457 ^b 2				dσ/dΩ(mb/sr)=15 (1973Bu02).

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$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ **1981Ha39,2008Ja01,1980Lo06 (continued)** ^{149}Nd Levels (continued)

E(level) [†]	J ^π @	L#	S [‡]	Comments
482 2		0	0.04	E(level): see also comment for 447 level. E(level): 482 3 (2008Ja01), 482 2 (1981Ha39), 483 5 (1980Lo06), 481 2 (1973Bu02). L: 0 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.02 (2008Ja01), 0.08 (1980Lo06). dσ/dΩ(mb/sr)=600 (1981Ha39), 370 (1980Lo06), 72 (1973Bu02). dσ/dΩ (mb/sr)=67 (60°), 27 (90°), 12 (125°) (2008Ja01).
511 2		6	0.63	E(level): 510 3 (2008Ja01), 525 2 (1981Ha39), 529 labeled in their spectral Fig. 1), 510 5 (1980Lo06), 512 2 (1973Bu02). Value of 525 2 in 1981Ha39 seems discrepant, not used in averaging. This level is probably same as the 517.44 observed in β ⁻ decay and in (n,γ), and 510 5 in (d,t) and 516 10 in (³ He,α) reported by 1980Lo06. L,S: from 2008Ja01 for 510 group. dσ/dΩ(mb/sr)=117 (1981Ha39), 44 (1980Lo06), 11 (1973Bu02). dσ/dΩ (mb/sr)=9 (60°), 20 (90°), 16 (125°) (2008Ja01) for a level at 510 keV 3.
547 2	&	1	0.16	E(level): 548 3 (2008Ja01), 548 2 (1981Ha39), 544 5 (1980Lo06), 547 2 (1973Bu02). L: 1 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.13 (2008Ja01), 0.17 (1980Lo06). dσ/dΩ(mb/sr)=881 (1981Ha39), 709 (1980Lo06), 266 (1973Bu02). dσ/dΩ (mb/sr)=237 (60°), 114 (90°), 44 (125°) (2008Ja01). A 383.6γ shown in (d,tγ) (1980Ka24) in coin with a 165.1γ.
570 2	3/2 ⁺	2	0.03	E(level): 571 3 (2008Ja01), 570 2 (1981Ha39), 569 2 (1973Bu02). L: 2 (1973Bu02,1981Ha39,2008Ja01). S: from 2008Ja01. dσ/dΩ(mb/sr)=106 (1981Ha39), 43 (1973Bu02). dσ/dΩ (mb/sr)=43 (60°), 30 (90°), 9 (125°) (2008Ja01).
590 2		2	0.08	E(level): 589 3 (2008Ja01), 591 2 (1981Ha39), 588 5 (1980Lo06), 590 2 (1973Bu02). L: 5 (1980Lo06), 2 (1981Ha39,2008Ja01). S: 0.03 (2008Ja01). dσ/dΩ(mb/sr)=64 (1981Ha39), 108 (1980Lo06), 24 (1973Bu02). dσ/dΩ (mb/sr)=26 (60°), 16 (90°), 20 (125°) (2008Ja01). J ^π : proposed as a doublet by 1981Ha39 to reconcile their 5/2 ⁺ assignment in (pol d,t) with the L(³ He,α)=5 (1980Lo06) giving 9/2 ⁻ , 11/2 ⁻ for the second component.
612 2		5,6	0.32	E(level): 611 3 (2008Ja01), 613 2 (1973Bu02). L,S: from 2008Ja01. Other: L=(6) (1973Bu02). dσ/dΩ(mb/sr)=4 (1973Bu02). dσ/dΩ (mb/sr)=7 (125°) (2008Ja01).
646 2	&	5	1.20	E(level): 645 3 (2008Ja01), 647 2 (1981Ha39), 648 5 (1980Lo06), 646 2 (1973Bu02). L: 5 (1980Lo06), 5,(6) (1981Ha39), 5 (2008Ja01). S: 1.77 (2008Ja01), 1.7 (1980Lo06). dσ/dΩ(mb/sr)=222 (1981Ha39), 389 (1980Lo06), 77 (1973Bu02). dσ/dΩ (mb/sr)=65 (60°), 113 (90°), 71 (125°) (2008Ja01).
689 2				E(level): level from 1981Ha39 only. dσ/dΩ(mb/sr)=132 (1981Ha39).
708 2		2	0.90	E(level): 706 3 (2008Ja01), 709 2 (1981Ha39), 708 5 (1980Lo06), 707 2 (1973Bu02). L: 2 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.49 (2008Ja01), 0.70 (1980Lo06). dσ/dΩ(mb/sr)=1526 (1981Ha39), 1359 (1980Lo06), 575 (1973Bu02). dσ/dΩ (mb/sr)=561 (60°), 406 (90°), 185 (125°) (2008Ja01). J ^π : 3/2 ⁺ from (pol d,t). However, the data may be distorted by an unknown contribution from the 705 state excited in ¹⁴⁹ Pr β ⁻ decay. See Adopted Levels.
739 2	3/2 ⁺	2	0.44	E(level): 738 3 (2008Ja01), 740 2 (1981Ha39), 742 5 (1980Lo06), 739 2 (1973Bu02). L: 2 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.25 (2008Ja01), 0.44 (1980Lo06). dσ/dΩ(mb/sr)=618 (1981Ha39), 682 (1980Lo06), 264 (1973Bu02). dσ/dΩ (mb/sr)=267 (60°), 193 (90°), 103 (125°) (2008Ja01).
796 2		0	0.06	E(level): 796 2 (1981Ha39), 796 2 (1973Bu02).

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$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ **1981Ha39,2008Ja01,1980Lo06 (continued)** ^{149}Nd Levels (continued)

E(level) [†]	J ^π @	L#	S [‡]	Comments
				L: 0 (1981Ha39). dσ/dΩ(mb/sr)=198 (1981Ha39), 32 (1973Bu02). dσ/dΩ(mb/sr)=43 (1973Bu02). E(level): 812 3 (2008Ja01), 813 2 (1981Ha39), 815 5 (1980Lo06), 813 2 (1973Bu02). L: 0 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.23 (2008Ja01), 0.37 (1980Lo06). dσ/dΩ(mb/sr)=1586 (1981Ha39), 1731 (1980Lo06), 358 (1973Bu02). dσ/dΩ (mb/sr)=401 (60°), 258 (90°), 132 (125°) (2008Ja01). A 529γ shown in coin with 120.3γ and 165.1γ in (d,tγ) (1980Ka24). E(level): 831 3 (2008Ja01), 836 2 (1981Ha39), 837 2 (1973Bu02). L,S: from 2008Ja01. dσ/dΩ(mb/sr)=152 (1981Ha39), 34 (1973Bu02). dσ/dΩ (mb/sr)=10 (60°), 10 (90°), 14 (125°) (2008Ja01). E(level): 860 3 (2008Ja01), 861 2 (1981Ha39), 862 2 (1973Bu02). L,S: from 2008Ja01. dσ/dΩ(mb/sr)=80 (1981Ha39), 23 (1973Bu02). dσ/dΩ (mb/sr)=16 (60°), 21 (90°), 13 (125°) (2008Ja01). E(level): 880 3 (2008Ja01), 880 2 (1981Ha39), 881 5 (1980Lo06), 881 2 (1973Bu02). L: 2 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.15 (2008Ja01), 0.28 (1980Lo06). dσ/dΩ(mb/sr)=360 (1981Ha39), 470 (1980Lo06), 149 (1973Bu02). dσ/dΩ (mb/sr)=159 (60°), 102 (90°), 57 (125°) (2008Ja01). E(level): 918 3 (2008Ja01), 915 2 (1981Ha39), 915 5 (1980Lo06), 918 2 (1973Bu02). L,S: from 2008Ja01. dσ/dΩ(mb/sr)=55 (1981Ha39), 91 (1980Lo06), 18 (1973Bu02). dσ/dΩ (mb/sr)=5 (60°), 27 (90°), 13 (125°) (2008Ja01). E(level): 959 3 (2008Ja01), 956 2 (1981Ha39), 954 2 (1973Bu02). L,S: from 2008Ja01. dσ/dΩ(mb/sr)=435 (1981Ha39), 16 (1973Bu02). dσ/dΩ (mb/sr)=34 (60°), 33 (90°), 18 (125°) (2008Ja01). 963 ^b 4 985 2 0 0.76 E(level): 984 3 (2008Ja01), 985 2 (1981Ha39), 984 5 (1980Lo06), 986 2 (1973Bu02). L: 0 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.53 (2008Ja01), 0.96 (1980Lo06). dσ/dΩ(mb/sr)=3249 (1981Ha39), 4595 (1980Lo06), 950 (1973Bu02). dσ/dΩ (mb/sr)=977 (60°), 580 (90°), 200 (125°) (2008Ja01). A 436.5γ shown in coin with a 165.1γ in (d,tγ) (1980Ka24). 1026 2 & 1 0.04 E(level): 1025 6 (2008Ja01), 1025 2 (1981Ha39), 1026 5 (1980Lo06), 1027 2 (1973Bu02). L: 1 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.04 (2008Ja01), 0.05 (1980Lo06). dσ/dΩ(mb/sr)=195 (1981Ha39), 265 (1980Lo06), 50 (1973Bu02). dσ/dΩ (mb/sr)=44 (60°), 28 (90°), 16 (125°) (2008Ja01). 1045 2 ^a 2 0.16 E(level): 1044 6 (2008Ja01), 1045 2 (1981Ha39), 1039 5 (1980Lo06), 1046 2 (1973Bu02). L: 2 (1973Bu02,1980Lo06,1981Ha39,2008Ja01). S: 0.08 (2008Ja01), 0.23 (1980Lo06). dσ/dΩ(mb/sr)=230 (1981Ha39), 401 (1980Lo06), 66 (1973Bu02). dσ/dΩ (mb/sr)=66 (60°), 55 (90°), 28 (125°) (2008Ja01). 1067 2 E(level): 1060 6 (2008Ja01), 1067 2 (1981Ha39), 1067 2 (1973Bu02). dσ/dΩ(mb/sr)=35 (1981Ha39), 5 (1973Bu02). dσ/dΩ (mb/sr)=13 (90°), 10 (125°) (2008Ja01). E(level): incompletely resolved from 1045. 1082 2 E(level): 1086 6 (2008Ja01), 1081 2 (1981Ha39), 1083 2 (1973Bu02). dσ/dΩ(mb/sr)=55 (1981Ha39), 19 (1973Bu02). dσ/dΩ (mb/sr)=8 (60°) (2008Ja01). 1129 2 & 2 0.18 E(level): 1128 6 (2008Ja01), 1129 2 (1981Ha39), 1130 2 (1973Bu02). L: 2 (1973Bu02,1981Ha39,2008Ja01).

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$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ **1981Ha39,2008Ja01,1980Lo06** (continued) ^{149}Nd Levels (continued)

$E(\text{level})^\dagger$	$J^\pi@$	$L^\#$	$S^\ddagger$	Comments
1149 2	a	2	0.08	S: 0.12 (2008Ja01). $d\sigma/d\Omega(\text{mb/sr})=342$ (1981Ha39), 101 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=83$ (60°), 85 (90°), 44 (125°) (2008Ja01). E(level): 1147 6 (2008Ja01), 1149 2 (1981Ha39), 1150 2 (1973Bu02). L: 2 (1981Ha39,2008Ja01). S: 0.04 (2008Ja01). $d\sigma/d\Omega(\text{mb/sr})=84$ (1981Ha39), 25 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=33$ (60°), 17 (90°), 13 (125°) (2008Ja01).
1168 ^b 4 1178 2				$d\sigma/d\Omega(\text{mb/sr})=7$ (1973Bu02). E(level): 1181 6 (2008Ja01), 1178 2 (1981Ha39), 1178 2 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=53$ (1981Ha39), 9 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=14$ (60°) (2008Ja01) for 1181 6 level.
1189 ^b 4 1220 2				$d\sigma/d\Omega(\text{mb/sr})=12$ (1973Bu02). E(level): 1220 2 (1981Ha39), 1220 2 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=20$ (1981Ha39), 7 (1973Bu02).
1232 2				E(level): 1230 2 (1981Ha39), 1233 2 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=134$ (1981Ha39), 13 (1973Bu02).
1245 2		1	0.03	E(level): 1240 6 (2008Ja01), 1244 2 (1981Ha39), 1246 2 (1973Bu02). L,S: from 2008Ja01. $d\sigma/d\Omega(\text{mb/sr})=85$ (1981Ha39), 24 (1973Bu02).
1283 2	$1/2^-$	1	0.06	$d\sigma/d\Omega(\text{mb/sr})=23$ (60°), 29 (90°), 12 (125°) (2008Ja01) for 1240 6 level. E(level): 1287 6 (2008Ja01), 1282 2 (1981Ha39), 1283 2 (1973Bu02). L: 1 (1981Ha39,2008Ja01). S: 0.02 (2008Ja01). $d\sigma/d\Omega(\text{mb/sr})=85$ (1981Ha39), 22 (1973Bu02). $d\sigma/d\Omega(\text{mb/sr})=13$ (60°), 12 (90°), 7 (125°) (2008Ja01). J^π : L(d,t)=0 to a 1273 group (1980Lo06) has been ignored in subsequent work (1981Ha39) by same authors, suggesting that they believe there is only one level there with L=1.
1311 ^b 4 1358 2		0	0.02	$d\sigma/d\Omega(\text{mb/sr})=5$ (1973Bu02). E(level): 1353 6 (2008Ja01), 1359 2 (1981Ha39). L: 0 (1981Ha39,2008Ja01). S: 0.01 (2008Ja01). $d\sigma/d\Omega(\text{mb/sr})=122$ (1981Ha39). $d\sigma/d\Omega(\text{mb/sr})=17$ (60°), 10 (90°), 5 (125°) (2008Ja01).
1413 6				E(level): level from 2008Ja01 only. $d\sigma/d\Omega(\text{mb/sr})=5$ (60°), 2 (90°), 2 (125°) (2008Ja01).
1465 2				E(level): level from 1981Ha39 only. $d\sigma/d\Omega(\text{mb/sr})=40$ (1981Ha39).
1481 2				E(level): 1479 6 (2008Ja01), 1481 2 (1981Ha39). $d\sigma/d\Omega(\text{mb/sr})=170$ (1981Ha39).
1505 2		1	0.08	$d\sigma/d\Omega(\text{mb/sr})=13$ (60°) (2008Ja01). E(level): 1503 6 (2008Ja01), 1505 2 (1981Ha39). L: 1 (1981Ha39,2008Ja01). S: 0.04 (2008Ja01). $d\sigma/d\Omega(\text{mb/sr})=244$ (1981Ha39).
1531 2		1	0.04	$d\sigma/d\Omega(\text{mb/sr})=36$ (60°), 10 (125°) (2008Ja01). E(level): 1531 2 (1981Ha39), 1531 5 (1980Lo06). L: (0) (1980Lo06), 1 (1981Ha39). S: 0.04 (1980Lo06).
1553 2		1	0.04	$d\sigma/d\Omega(\text{mb/sr})=116$ (1981Ha39), 176 (1980Lo06). E(level): 1547 6 (2008Ja01), 1553 2 (1981Ha39), 1555 5 (1980Lo06). L: (0) (1980Lo06), 1 (1981Ha39). S: 0.04 (1980Lo06).
1622 2		5	0.72	$d\sigma/d\Omega(\text{mb/sr})=110$ (1981Ha39), 163 (1980Lo06). $d\sigma/d\Omega(\text{mb/sr})=18$ (60°) (2008Ja01). E(level): 1616 6 (2008Ja01), 1622 2 (1981Ha39), 1622 5 (1980Lo06).

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$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ 1981Ha39,2008Ja01,1980Lo06 (continued) ^{149}Nd Levels (continued)

<u>E(level)[†]</u>	<u>L[#]</u>	<u>S[‡]</u>	<u>Comments</u>
1682 ^c 5	5	1.1	L,S: from 1980Lo06. dσ/dΩ(mb/sr)=40 (1981Ha39), 100 (1980Lo06). dσ/dΩ (mb/sr)=9 (60°), 22 (90°), 11 (125°) (2008Ja01). dσ/dΩ(mb/sr)=75 (1980Lo06).
1708 2			E(level): 1702 6 (2008Ja01), 1709 2 (1981Ha39), 1706 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=86 (1981Ha39), 148 (1980Lo06). dσ/dΩ (mb/sr)=34 (90°), 26 (125°) (2008Ja01).
1721 5	2	0.09	E(level): 1724 6 (2008Ja01), 1718 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=103 (1980Lo06). dσ/dΩ (mb/sr)=12 (90°), 11 (125°) (2008Ja01).
1738 5	2	0.10	E(level): 1741 6 (2008Ja01), 1736 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=107 (1980Lo06). dσ/dΩ (mb/sr)=13 (60°), 15 (90°), 5 (125°) (2008Ja01).
1787 5	2	0.32	E(level): 1789 6 (2008Ja01), 1785 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=340 (1980Lo06). dσ/dΩ (mb/sr)=67 (60°), 57 (90°), 44 (125°) (2008Ja01).
1797 2	2	0.24	E(level): level from 1981Ha39 only. L: 2 (1981Ha39).
1819 5	2	0.31	E(level): 1821 6 (2008Ja01), 1817 5 (1980Lo06). dσ/dΩ(mb/sr)=198 (1980Lo06). dσ/dΩ (mb/sr)=3 (60°), 8 (90°), 8 (125°) (2008Ja01).
1861 5			E(level): 1864 6 (2008Ja01), 1858 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=326 (1980Lo06). dσ/dΩ (mb/sr)=53 (60°), 52 (90°), 24 (125°) (2008Ja01).
1883 5	2	0.08	E(level): 1884 6 (2008Ja01), 1882 5 (1980Lo06). dσ/dΩ(mb/sr)=103 (1980Lo06). dσ/dΩ (mb/sr)=1 (60°), 12 (90°), 8 (125°) (2008Ja01).
1913 5			E(level): 1918 6 (2008Ja01), 1909 5 (1980Lo06). dσ/dΩ(mb/sr)=76 (1980Lo06). dσ/dΩ (mb/sr)=5 (60°), 4 (90°), 6 (125°) (2008Ja01).
1957 ^c 5	2	0.16	L,S: from 1980Lo06. dσ/dΩ(mb/sr)=75 (1980Lo06).
1981 5	2	0.16	E(level): 1983 6 (2008Ja01), 1980 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=179 (1980Lo06). dσ/dΩ (mb/sr)=19 (60°), 10 (90°), 11 (125°) (2008Ja01).
2031 5	2	0.26	E(level): 2033 6 (2008Ja01), 2029 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=305 (1980Lo06). dσ/dΩ (mb/sr)=24 (60°), 26 (90°), 20 (125°) (2008Ja01).
2054 5	2	0.34	E(level): 2052 6 (2008Ja01), 2055 5 (1980Lo06). dσ/dΩ(mb/sr)=135 (1980Lo06). dσ/dΩ (mb/sr)=8 (90°), 6 (125°) (2008Ja01).
2065 6			E(level): level from 2008Ja01 only. dσ/dΩ (mb/sr)=16 (90°), 7 (125°) (2008Ja01).
2081 5	2	0.34	E(level): 2086 6 (2008Ja01), 2078 5 (1980Lo06). L,S: from 1980Lo06. dσ/dΩ(mb/sr)=333 (1980Lo06). dσ/dΩ (mb/sr)=54 (60°), 54 (90°), 32 (125°) (2008Ja01).
2102 5	2	0.34	E(level): 2103 6 (2008Ja01), 2102 5 (1980Lo06). dσ/dΩ(mb/sr)=162 (1980Lo06). dσ/dΩ (mb/sr)=8 (90°), 5 (125°) (2008Ja01).

Continued on next page (footnotes at end of table)

$^{150}\text{Nd}(\text{pol d,t}),(\text{d,t})$ [1981Ha39](#),[2008Ja01](#),[1980Lo06](#) (continued) ^{149}Nd Levels (continued)

<u>E(level)[†]</u>	<u>L[#]</u>	<u>S[‡]</u>	<u>Comments</u>
2121 ^c 5			dσ/dΩ(mb/sr)=79 (1980Lo06).
2151 ^c 5			dσ/dΩ(mb/sr)=78 (1980Lo06).
2231 5	2	0.19	E(level): 2237 6 (2008Ja01), 2227 5 (1980Lo06). L,S: from 1980Lo06 . dσ/dΩ(mb/sr)=174 (1980Lo06).
2266 ^c 5			dσ/dΩ (mb/sr)=11 (60°), 17 (90°) (2008Ja01) for 2237 6 level.
2297 5	2	0.54	dσ/dΩ(mb/sr)=113 (1980Lo06). E(level): 2303 6 (2008Ja01), 2293 5 (1980Lo06). L,S: from 1980Lo06 . dσ/dΩ(mb/sr)=569 (1980Lo06).
			dσ/dΩ (mb/sr)=47 (60°), 48 (90°) (2008Ja01) for 2303 6 level.

[†] From weighted averages of the energy values available from [2008Ja01](#), [1981Ha39](#), [1980Lo06](#) and [1973Bu02](#), as listed under comments.

[‡] σ(exp)/(N×σ(theory)). The S values are from [1981Ha39](#), and have been doubled to fit this definition. σ(theory) is derived from a DWBA calculation using the optical model parameters discussed by the authors. N was taken to be 3.33.

[#] From comparison of σ(θ) distributions with DWBA calculations.

[@] From Ay(θ) in (pol d,t).

[&] The authors assign spin of L+1/2. In the opinion of the evaluators, the analyzing power data do not exclude L-1/2.

^a The authors assign spin of L-1/2. In the opinion of the evaluators, the analyzing power data do not exclude L+1/2.

^b Level from [1973Bu02](#) only.

^c Level from [1980Lo06](#) only.