

**$^{95}\text{Mo}(\text{p,n}),(\text{p,n}\gamma)$  1980Mi06,1974Sa19,1971Ki06**

| Type            | Author                                   | History | Citation             | Literature Cutoff Date |
|-----------------|------------------------------------------|---------|----------------------|------------------------|
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1970Ki01: E=4.0-5.4 MeV. Measured neutrons; TOF.

1971Ki06: E=3.5-4.4 MeV. Measured neutrons; TOF.

1974Sa19: E=3.1-6.5 MeV. Measured  $\gamma$ -excitation functions,  $\gamma\gamma$ -coincidences,  $\gamma'$ s, and  $\gamma(\theta)$  (Ge(Li)) and  $n\gamma$ -coincidences (scin,Ge(Li)). DSAM.

1980Mi06: E=2.8-5.1 MeV. Measured  $\gamma'$ s,  $\gamma\gamma(\theta)$ , and  $\gamma$ -excitation functions (Ge(Li)) and neutron-excitation functions (scin).

 $^{95}\text{Tc}$  Levels

| E(level) <sup>c</sup>      | J $\pi^{\dagger}$                                   | T <sub>1/2</sub> <sup>‡</sup> | Comments                                                                                                                                                                                                                                                                                                                      |
|----------------------------|-----------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0.0 <sup>#</sup>           | 9/2 <sup>+</sup>                                    |                               |                                                                                                                                                                                                                                                                                                                               |
| 38.89 <sup>†#</sup> 4      | 1/2 <sup>-</sup>                                    |                               |                                                                                                                                                                                                                                                                                                                               |
| 336.40 <sup>#</sup> 3      | 7/2 <sup>+</sup>                                    |                               | J $\pi$ : $\neq 5/2$ from $\gamma(\theta)$ (1974Sa19). 1/2, 7/2 <sup>+</sup> from comparison of statistical theory to 2 <sup>+</sup> res yield; $\neq 1/2$ from $\gamma$ to 9/2 <sup>+</sup> (1980Mi06).                                                                                                                      |
| 626.79 <sup>#</sup> 3      | 5/2 <sup>+</sup>                                    |                               | J $\pi$ : $\gamma(\theta)$ consistent with 5/2 or 7/2 (1974Sa19). 3/2 <sup>+</sup> , 5/2 <sup>+</sup> from comparison of statistical theory to 2 <sup>+</sup> res yield; $\neq 3/2^+$ from strong $\gamma$ to 9/2 <sup>+</sup> (1980Mi06).                                                                                    |
| 646.52 <sup>#</sup> 5      | 3/2 <sup>-</sup> @                                  | 0.44 ps +90-19                |                                                                                                                                                                                                                                                                                                                               |
| 667.80 <sup>#</sup> 4      | 5/2 <sup>-</sup> @                                  |                               |                                                                                                                                                                                                                                                                                                                               |
| 882.10 6                   | 13/2 <sup>+</sup>                                   | $\geq 416$ fs                 | 1974Sa19 note the presence a small peak in the tof spectra of 1970Ki01 which may correspond to this state.                                                                                                                                                                                                                    |
| 927.74 <sup>#</sup> 3      | 3/2 <sup>+</sup>                                    | $\geq 589$ fs                 | J $\pi$ : 9/2, 11/2, 13/2 from $\gamma(\theta)$ (1974Sa19). $\neq 5/2^-$ , 7/2 <sup>-</sup> , 9/2 <sup>-</sup> , 11/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield (1980Mi06).                                                                                                              |
| 957.13 <sup>#</sup> 6      | 11/2 <sup>+</sup>                                   | $\geq 832$ fs                 | J $\pi$ : $\leq 5/2^-$ from $\gamma$ to 1/2 <sup>-</sup> ; $\geq 3/2^+$ from $\gamma$ to 7/2 <sup>+</sup> ; $\neq 5/2^-$ from large 301 $\gamma$ $\delta$ required to fit $\gamma(\theta)$ (1974Sa19). 3/2 <sup>+</sup> , 5/2 <sup>+</sup> from from comparison of statistical theory to 2 <sup>+</sup> res yield (1980Mi06). |
| 1033.85? 7                 | (1/2 <sup>+</sup> )                                 | 53 fs +13-9                   | J $\pi$ : 11/2 from $\gamma(\theta)$ ; $\pi=+$ from comparison of $\sigma$ to statistical theory (1974Sa19). 11/2 <sup>+</sup> , 13/2 <sup>-</sup> , 15/2 <sup>-</sup> from comparison of statistical theory to 2 <sup>+</sup> and 4 <sup>+</sup> res yields; $\neq 15/2^-$ from $\gamma$ to 9/2 <sup>+</sup> (1980Mi06).     |
| 1084.91 <sup>#</sup> 4     | (5/2 <sup>+</sup> )                                 | $\geq 347$ fs                 | J $\pi$ : 1/2 or $\geq 13/2$ from low $\sigma$ ; $\neq 13/2$ from possible d $\gamma$ to 1/2 <sup>-</sup> (1974Sa19). 1/2 <sup>+</sup> , 7/2 <sup>+</sup> from comparison of statistical theory to 2 <sup>+</sup> res yield; isotropic $\gamma(\theta)$ to 1/2 <sup>-</sup> (1980Mi06).                                       |
| 1178.56 <sup>#</sup> 3     | 7/2 <sup>+</sup> <sup>a</sup>                       | 0.37 ps +19-9                 | J $\pi$ : probably 7/2 but 5/2 could not be excluded from $\gamma(\theta)$ (1974Sa19). 3/2 <sup>+</sup> , 5/2 <sup>+</sup> from comparison of statistical theory to 2 <sup>+</sup> res yield (1980Mi06).                                                                                                                      |
| 1213.13 <sup>&amp;</sup> 9 | 9/2                                                 |                               | J $\pi$ : 7/2 from $\gamma(\theta)$ ; M1+E2 $\gamma$ to (5/2) <sup>+</sup> (1974Sa19).                                                                                                                                                                                                                                        |
| 1214.53 <sup>&amp;</sup> 5 | 9/2 <sup>-</sup>                                    | $\geq 624$ fs                 | J $\pi$ : 9/2 from $\gamma(\theta)$ (1974Sa19). 5/2 <sup>-</sup> , 7/2 <sup>+</sup> , 9/2 <sup>+</sup> , 11/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield; $\neq 5/2^-$ from $\gamma$ to 9/2 <sup>+</sup> (1980Mi06).                                                                      |
| 1275.89 <sup>&amp;</sup> 5 | (3/2 <sup>+</sup> )                                 | 69 fs +9-8                    | J $\pi$ : 7/2 <sup>-</sup> , 9/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield; $\neq 7/2^-$ from weak 2 <sup>+</sup> res yield (1980Mi06). 7/2 from $\gamma(\theta)$ and $\pi=-$ from (M1+E2) $\gamma$ to 5/2 <sup>-</sup> (1974Sa19) discrepant.                                           |
| 1281.47 <sup>&amp;</sup> 5 | 7/2 <sup>(-)</sup>                                  | 134 fs +70-38                 | J $\pi$ : 1/2, 3/2, 5/2 from $\gamma(\theta)$ ; $\neq 1/2$ from d $\gamma$ to 5/2 <sup>-</sup> (1974Sa19). 1/2 <sup>-</sup> , 3/2 <sup>-</sup> from comparison of statistical theory to 2 <sup>+</sup> and 4 <sup>+</sup> res yields (1980Mi06).                                                                              |
| 1307.19 <sup>#</sup> 9     | 11/2 <sup>+</sup>                                   | 0.30 ps +18-8                 | J $\pi$ : 7/2 from $\gamma(\theta)$ (1974Sa19). 1/2 <sup>-</sup> , 7/2 <sup>-</sup> from comparison of statistical theory to 2 <sup>+</sup> res yield; $\neq 1/2^-$ from strong $\gamma'$ s to 9/2 <sup>+</sup> and 7/2 <sup>+</sup> (1980Mi06).                                                                              |
| 1416.38 <sup>#</sup> 6     | 3/2, 5/2 <sup>(-)</sup> <sup>b</sup>                | $\geq 492$ fs                 | J $\pi$ : 11/2 from $\gamma(\theta)$ ; E2 $\gamma$ to 9/2 <sup>+</sup> (1974Sa19).                                                                                                                                                                                                                                            |
| 1433.21 <sup>#</sup> 4     | 5/2 <sup>+</sup>                                    | 57 fs +7-6                    | J $\pi$ : 3/2, 5/2 from $\gamma(\theta)$ ; $\neq 5/2^+$ from strong $\gamma$ to 1/2 <sup>-</sup> (1974Sa19).                                                                                                                                                                                                                  |
| 1618.50 <sup>#</sup> 5     | (3/2 <sup>+</sup> , 5/2 <sup>-</sup> ) <sup>b</sup> | 0.22 ps +18-7                 | J $\pi$ : 5/2 <sup>+</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield and $\gamma'$ s to 9/2 <sup>+</sup> , 7/2 <sup>+</sup> , and 5/2 <sup>+</sup> (1980Mi06).                                                                                                                                        |
|                            |                                                     |                               | J $\pi$ : $\leq 5/2$ from $\gamma(\theta)$ ; $\neq 1/2^+$ from d, E2 $\gamma$ to 5/2 <sup>-</sup> (1974Sa19).                                                                                                                                                                                                                 |

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$^{95}\text{Mo}(\text{p,n}),(\text{p,n}\gamma)$  **1980Mi06,1974Sa19,1971Ki06 (continued)** $^{95}\text{Tc}$  Levels (continued)

| E(level) <sup>c</sup>       | $J^\pi$ <sup>†</sup>                                    | $T_{1/2}$ <sup>‡</sup> | Comments                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|---------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1631.99 <sup>&amp; 10</sup> | 11/2                                                    | 30 fs +9–7             | $J^\pi$ : 5/2,7/2,9/2,11/2 from $\gamma(\theta)$ ; 11/2,13/2,15/2 from d $\gamma$ to 13/2 <sup>+</sup> (1974Sa19).                                                                                                                                                                                                                               |
| 1639.35 <sup>&amp; 6</sup>  | (3/2 <sup>-</sup> )                                     | 83 fs +25–18           | $J^\pi$ : 3/2,5/2 from $\gamma(\theta)$ to (3/2 <sup>+</sup> ) (1974Sa19). 1/2 <sup>-</sup> ,3/2 <sup>+</sup> ,13/2 <sup>+</sup> ,15/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield and $\neq$ 13/2 <sup>+</sup> ,15/2 <sup>-</sup> from $\gamma$ to 3/2 <sup>+</sup> ,5/2 <sup>+</sup> (1980Mi06) discrepant. |
| 1691.27 5                   | 5/2 <sup>+</sup> ,7/2 <sup>+</sup>                      | 136 fs +30–21          | $J^\pi$ : 5/2 <sup>+</sup> ,7/2,9/2 <sup>+</sup> from d,E2 $\gamma$ 's to 5/2 <sup>+</sup> and 9/2 <sup>+</sup> . 9/2 suggested by $\gamma(\theta)$ and low $\sigma$ inconsistent with 3/2 <sup>+</sup> ,5/2 <sup>+</sup> ,7/2 <sup>+</sup> from log $ft=5.5$ from 5/2 <sup>+</sup> (1974Sa19).                                                  |
| 1694.50 5                   | 3/2 <sup>+</sup> ,5/2 <sup>(-)</sup> ,7/2 <sup>-b</sup> | 129 fs +36–18          | $J^\pi$ : 3/2 <sup>+</sup> ,5/2,7/2 <sup>-</sup> from d,E2 $\gamma$ 's to 3/2 <sup>-</sup> and 7/2 <sup>+</sup> (1974Sa19). 5/2 <sup>-</sup> ,11/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield; $\neq$ 11/2 <sup>-</sup> from $\gamma$ to 3/2 <sup>-</sup> (1980Mi06).                                        |
| 1747.02 6                   | (5/2) <sup>+</sup>                                      | 44 fs +8–7             | $J^\pi$ : $\neq$ 3/2 <sup>+</sup> from d,E2 $\gamma$ to 9/2 <sup>+</sup> (1974Sa19).                                                                                                                                                                                                                                                             |
| 1785.19 4                   | (7/2) <sup>+</sup> <sup>a</sup>                         | 40 fs 5                | $J^\pi$ : $\neq$ 3/2 <sup>+</sup> from d,E2 $\gamma$ to 9/2 <sup>+</sup> ; 7/2 favored from $\gamma(\theta)$ (1974Sa19).                                                                                                                                                                                                                         |
| 1837.71? 21                 | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ) <sup>a</sup>      |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 1873.9? 10                  | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ) <sup>a</sup>      |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 1888.00? 20                 | (5/2 <sup>-</sup> ) <sup>b</sup>                        |                        | State proposed by 1980Mi06 who measured a lower 1261 $\gamma$ threshold than 1974Sa19.                                                                                                                                                                                                                                                           |
| 1920.02 6                   | (1/2 <sup>-</sup> ,3/2,5/2) <sup>b</sup>                | 80 fs +23–16           | $J^\pi$ : 1/2 <sup>-</sup> ,3/2,5/2,7/2 <sup>-</sup> from d,E2 $\gamma$ 's to 3/2 <sup>-</sup> and 5/2 <sup>-</sup> . $\neq$ 7/2 <sup>-</sup> from possible d,E2 $\gamma$ to 3/2 <sup>+</sup> (1974Sa19).                                                                                                                                        |
| 1920.99 10                  | 9/2 <sup>a</sup>                                        | 73 fs +23–16           | $J^\pi$ : from $\gamma(\theta)$ (1974Sa19).                                                                                                                                                                                                                                                                                                      |
| 1958.97 10                  | (5/2 <sup>-</sup> )                                     | $\geq$ 596 fs          | $J^\pi$ : 9/2 favored from $\gamma(\theta)$ but 5/2 and 7/2 could not be excluded (1974Sa19). 5/2 <sup>-</sup> ,11/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield (1980Mi06).                                                                                                                                  |
| 1978.55 5                   | 3/2 <sup>+</sup> ,5/2 <sup>+</sup> ,7/2 <sup>+</sup>    | 40 fs +9–7             |                                                                                                                                                                                                                                                                                                                                                  |
| 2032.33 12                  | 5/2 <sup>+</sup> ,7/2,9/2 <sup>(-)</sup> <sup>b</sup>   | 118 fs +67–35          | $J^\pi$ : 7/2 favored by $\gamma(\theta)$ but 5/2 and 9/2 could not be excluded; $\neq$ 5/2 <sup>-</sup> from d,E2 $\gamma$ to 9/2 <sup>+</sup> (1974Sa19).                                                                                                                                                                                      |
| 2086.02 4                   | 3/2 <sup>+</sup>                                        | 34 fs +16–11           | $J^\pi$ : $\neq$ 7/2 <sup>+</sup> from d,Q $\gamma$ to 1/2 <sup>-</sup> (1974Sa19).                                                                                                                                                                                                                                                              |
| 2118.1? 10                  | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> ) <sup>a</sup>      |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2164.1? 6                   |                                                         |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2168.18 5                   | 7/2 <sup>+</sup> <sup>a</sup>                           | 50 fs +11–9            | $J^\pi$ : 7/2 from $\gamma(\theta)$ ; d,E2 $\gamma$ to (3/2 <sup>+</sup> ) (1974Sa19).                                                                                                                                                                                                                                                           |
| 2189.00 6                   | 5/2 <sup>+</sup> ,7/2 <sup>+</sup> <sup>a</sup>         | 37 fs +12–9            | $J^\pi$ : 5/2,7/2,9/2 <sup>+</sup> from d,E2 $\gamma$ to 5/2 <sup>+</sup> and d,Q $\gamma$ to 9/2 <sup>+</sup> ; $\neq$ 7/2 <sup>-</sup> ,9/2 <sup>+</sup> from d,E2 $\gamma$ to 3/2 <sup>+</sup> (1974Sa19).                                                                                                                                    |
| 2210.6 3                    |                                                         |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2219.59 20                  | (7/2 <sup>+</sup> ) <sup>a</sup>                        |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2236.91? 20                 | ( $\geq$ 5/2)                                           |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2240.6? 3                   |                                                         |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2251.99 15                  | (7/2) <sup>+</sup> <sup>a</sup>                         |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2267.64 9                   | (7/2) <sup>+</sup>                                      | 0.22 ps +52–11         | $J^\pi$ : 5/2 <sup>-</sup> ,7/2 <sup>+</sup> ,9/2 <sup>+</sup> ,11/2 <sup>-</sup> from comparison of statistical theory to 4 <sup>+</sup> res yield; $\neq$ 11/2 <sup>-</sup> from $\gamma$ to 3/2 <sup>+</sup> ,5/2 <sup>+</sup> (1980Mi06).                                                                                                    |
| 2318.3? 4                   |                                                         |                        |                                                                                                                                                                                                                                                                                                                                                  |
| 2324.40 13                  | 5/2 <sup>+</sup> ,7/2 <sup>+</sup>                      |                        |                                                                                                                                                                                                                                                                                                                                                  |

<sup>†</sup> From the Adopted Levels; contributing spin and parity or discrepant spin and parity arguments from this data set are given in comments or footnotes. Energy held fixed in least-squares adjustment.

<sup>‡</sup> From DSA measurements (1974Sa19). Only statistical uncertainties are given; the uncertainty due to the stopping power is not included but may be as large as 15%.

# Also reported by 1970Ki01.

@  $J^\pi(651)=3/2^-$  and  $J^\pi(670)=5/2^-$  from analysis of the neutron decay of the  $^{96}\text{Tc}$  2<sup>+</sup> IAR at 3908 keV (1971Ki06).

& Unresolved in the TOF spectra of 1970Ki01.

<sup>a</sup> 7/2<sup>+</sup>,9/2<sup>+</sup> from comparison of statistical theory to 4<sup>+</sup> resonance yield (1980Mi06).

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<sup>95</sup>Mo(p,n),(p,nγ) [1980Mi06,1974Sa19,1971Ki06](#) (continued)

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<sup>95</sup>Tc Levels (continued)

<sup>b</sup> 5/2<sup>-</sup> from comparison of statistical theory to 4<sup>+</sup> resonance yield and decay to 5/2<sup>-</sup> or 5/2<sup>+</sup> states ([1980Mi06](#)).  
<sup>c</sup> From least-squares fit to Eγ.

<sup>95</sup>Mo(p,n),(p,n $\gamma$ ) 1980Mi06,1974Sa19,1971Ki06 (continued)

$\gamma(^{95}\text{Tc})$

All information is from 1974Sa19, except as noted.

| E <sub>i</sub> (level) | J <sup><math>\pi</math></sup> <sub>i</sub> | E <sub><math>\gamma</math></sub> | I <sub><math>\gamma</math></sub> <sup>†</sup> | E <sub>f</sub> | J <sup><math>\pi</math></sup> <sub>f</sub> | Mult. <sup>‡</sup> | $\delta^{\#}$ | Comments                                                                             |
|------------------------|--------------------------------------------|----------------------------------|-----------------------------------------------|----------------|--------------------------------------------|--------------------|---------------|--------------------------------------------------------------------------------------|
| 336.40                 | 7/2 <sup>+</sup>                           | 336.40 4                         | 100                                           | 0.0            | 9/2 <sup>+</sup>                           | D+Q <sup>#</sup>   | +0.33 6       |                                                                                      |
| 626.79                 | 5/2 <sup>+</sup>                           | 290.33 3                         | 17.8 2                                        | 336.40         | 7/2 <sup>+</sup>                           |                    |               |                                                                                      |
|                        |                                            | 626.73 6                         | 82.2 6                                        | 0.0            | 9/2 <sup>+</sup>                           |                    |               |                                                                                      |
| 646.52                 | 3/2 <sup>-</sup>                           | 607.56 6                         | 100                                           | 38.89          | 1/2 <sup>-</sup>                           |                    |               |                                                                                      |
| 667.80                 | 5/2 <sup>-</sup>                           | 331.37 10                        | 1.9 2                                         | 336.40         | 7/2 <sup>+</sup>                           |                    |               |                                                                                      |
|                        |                                            | 628.92 6                         | 98.1 9                                        | 38.89          | 1/2 <sup>-</sup>                           |                    |               |                                                                                      |
| 882.10                 | 13/2 <sup>+</sup>                          | 882.10 6                         | 100                                           | 0.0            | 9/2 <sup>+</sup>                           | Q(+O) <sup>#</sup> | -0.07 10      | Mult.: possibly $\Delta J=0$ or stretched Q.                                         |
| 927.74                 | 3/2 <sup>+</sup>                           | 300.95 4                         | 47.0 4                                        | 626.79         | 5/2 <sup>+</sup>                           | D+Q <sup>#</sup>   | -0.21 3       |                                                                                      |
|                        |                                            | 591.50 8                         | 24.3 2                                        | 336.40         | 7/2 <sup>+</sup>                           | Q(+O) <sup>#</sup> | +0.15 10      |                                                                                      |
|                        |                                            | 888.90 5                         | 28.7 7                                        | 38.89          | 1/2 <sup>-</sup>                           | D <sup>#</sup>     |               |                                                                                      |
| 957.13                 | 11/2 <sup>+</sup>                          | 957.12 6                         | 100                                           | 0.0            | 9/2 <sup>+</sup>                           | D+Q <sup>#</sup>   | -3.0 6        | $\delta$ : other: -0.13 3.                                                           |
| 1033.85?               | (1/2 <sup>+</sup> )                        | 994.95 <sup>f</sup> 5            | 100                                           | 38.89          | 1/2 <sup>-</sup>                           | D                  |               |                                                                                      |
| 1084.91                | (5/2 <sup>+</sup> )                        | 458.0 2                          | 3.2 4                                         | 626.79         | 5/2 <sup>+</sup>                           |                    |               |                                                                                      |
|                        |                                            | 748.55 <sup>e</sup> 5            | 95 <sup>e</sup> 6                             | 336.40         | 7/2 <sup>+</sup>                           |                    |               |                                                                                      |
|                        |                                            | 1084.98 10                       | 1.8 2                                         | 0.0            | 9/2 <sup>+</sup>                           |                    |               |                                                                                      |
| 1178.56                | 7/2 <sup>+</sup>                           | 551.76 5                         | 27.7 5                                        | 626.79         | 5/2 <sup>+</sup>                           | M1+E2              | -0.22 10      | Mult.: D+Q from $\gamma(\theta)$ . $\neq$ E1+M2 from $\delta$ and comparison to RUL. |
|                        |                                            | 842.19 8                         | 21.1 4                                        | 336.40         | 7/2 <sup>+</sup>                           | D(+Q) <sup>#</sup> | +0.04 +40-25  |                                                                                      |
|                        |                                            | 1178.66 6                        | 51.2 7                                        | 0.0            | 9/2 <sup>+</sup>                           | D+Q <sup>#</sup>   | +0.41 +22-16  |                                                                                      |
| 1213.13                | 9/2                                        | 876.81 10                        | 90.7 14                                       | 336.40         | 7/2 <sup>+</sup>                           |                    |               |                                                                                      |
|                        |                                            | 1212.8 2                         | 9.3 3                                         | 0.0            | 9/2 <sup>+</sup>                           |                    |               |                                                                                      |
| 1214.53                | 9/2 <sup>-</sup>                           | 546.71 5                         | 66.5 9                                        | 667.80         | 5/2 <sup>-</sup>                           | Q+O <sup>#</sup>   | +0.50 +13-9   | $\delta$ : discrepant with adopted mult and $\delta$ .                               |
|                        |                                            | 878.36 10                        | 16.4 16                                       | 336.40         | 7/2 <sup>+</sup>                           | D                  |               |                                                                                      |
|                        |                                            | 1214.37 10                       | 15.1 21                                       | 0.0            | 9/2 <sup>+</sup>                           | D                  |               |                                                                                      |
| 1275.89                | (3/2 <sup>+</sup> )                        | 608.20 5                         | 31 7                                          | 667.80         | 5/2 <sup>-</sup>                           | D                  |               |                                                                                      |
|                        |                                            | 1236.91 8                        | 69 1                                          | 38.89          | 1/2 <sup>-</sup>                           | D(+Q) <sup>#</sup> | +0.12 60      | Isotropic $\gamma(\theta)$ .                                                         |
| 1281.47                | 7/2 <sup>(-)</sup>                         | 613.67 5                         | 75.6 4                                        | 667.80         | 5/2 <sup>-</sup>                           | D                  |               |                                                                                      |
|                        |                                            | 945.03 10                        | 9.8 4                                         | 336.40         | 7/2 <sup>+</sup>                           | D+Q <sup>#</sup>   | -0.38 +31-73  |                                                                                      |
|                        |                                            | 1281.52 10                       | 14.6 4                                        | 0.0            | 9/2 <sup>+</sup>                           | D+Q <sup>#</sup>   | +0.53 +60-30  |                                                                                      |
| 1307.19                | 11/2 <sup>+</sup>                          | 970.8 2                          | 18 4                                          | 336.40         | 7/2 <sup>+</sup>                           | E2                 |               | Mult.: Q from $\gamma(\theta)$ . $\neq$ M2 from comparison to RUL.                   |
|                        |                                            | 1307.18 10                       | 82 1                                          | 0.0            | 9/2 <sup>+</sup>                           | D+Q <sup>#</sup>   |               | $\delta$ : -0.13 3 or -3.3 8.                                                        |
| 1416.38                | 3/2,5/2 <sup>(-)</sup>                     | 748.55 <sup>e</sup> 5            | 60 <sup>e</sup> 12                            | 667.80         | 5/2 <sup>-</sup>                           |                    |               |                                                                                      |
|                        |                                            | 769.86 6                         | 29.8 5                                        | 646.52         | 3/2 <sup>-</sup>                           |                    |               |                                                                                      |
|                        |                                            | 1377.63 10                       | 9.9 3                                         | 38.89          | 1/2 <sup>-</sup>                           |                    |               |                                                                                      |
| 1433.21                | 5/2 <sup>+</sup>                           | 254.35 20                        | 1.7 3                                         | 1178.56        | 7/2 <sup>+</sup>                           | D                  |               |                                                                                      |
|                        |                                            | 348.44 20                        | 1.5 3                                         | 1084.91        | (5/2 <sup>+</sup> ) <sup>+</sup>           | D                  |               |                                                                                      |

<sup>95</sup>Mo(p,n),(p,n $\gamma$ ) [1980Mi06](#),[1974Sa19](#),[1971Ki06](#) (continued)

$\gamma(^{95}\text{Tc})$  (continued)

| E <sub>i</sub> (level) | J <sup><math>\pi</math></sup> <sub>i</sub>             | E <sub><math>\gamma</math></sub>                                                          | I <sub><math>\gamma</math></sub> <sup>†</sup>     | E <sub>f</sub>                              | J <sup><math>\pi</math></sup> <sub>f</sub>                                                                       | Mult. <sup>‡</sup>            | $\delta^{\#}$ | Comments                                                                                                                               |
|------------------------|--------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 1433.21                | 5/2 <sup>+</sup>                                       | 505.4 3<br>806.32 5<br>1096.73 8                                                          | 1.9& 6<br>16.4 4<br>76.2 9                        | 927.74<br>626.79<br>336.40                  | 3/2 <sup>+</sup><br>5/2 <sup>+</sup><br>7/2 <sup>+</sup>                                                         | D,E2<br>D,E2<br>M1+E2         |               | Mult.: D+Q from $\gamma(\theta)$ . $\neq$ E1+M2 from $\delta$ and comparison to RUL.                                                   |
| 1618.50                | (3/2 <sup>+</sup> ,5/2 <sup>-</sup> )                  | 1433.10 10<br>342.64 5<br>950.68 5<br>972.0 2<br>1579.54 10                               | 2.3&<br>12.3 7<br>41.5 11<br>16.8 13<br>29.4 7    | 0.0<br>1275.89<br>667.80<br>646.52<br>38.89 | 9/2 <sup>+</sup><br>(3/2 <sup>+</sup> ) <sup>+</sup><br>5/2 <sup>-</sup><br>3/2 <sup>-</sup><br>1/2 <sup>-</sup> | E2<br>D<br>D,E2<br>D,Q<br>D,Q |               |                                                                                                                                        |
| 1631.99                | 11/2                                                   | 750 1<br>1631.97 10                                                                       | 58 12<br>42 4                                     | 882.10<br>0.0                               | 13/2 <sup>+</sup><br>9/2 <sup>+</sup>                                                                            | D<br>D+Q <sup>#</sup>         | +0.14 9       |                                                                                                                                        |
| 1639.35                | (3/2 <sup>-</sup> )                                    | 711.61 5<br>992.33 <sup>df</sup> 70                                                       | 87.0 15<br>13 <sup>d</sup> 2                      | 927.74<br>646.52                            | 3/2 <sup>+</sup><br>3/2 <sup>-</sup>                                                                             | D<br>D,E2                     |               |                                                                                                                                        |
| 1691.27                | 5/2 <sup>+</sup> ,7/2 <sup>+</sup>                     | 606.3 5<br>1064.42 6<br>1355.10 20<br>1691.35 10                                          | 5.5 6<br>39.5 5<br>48.4 20<br>6.6 3               | 1084.91<br>626.79<br>336.40<br>0.0          | (5/2 <sup>+</sup> ) <sup>+</sup><br>5/2 <sup>+</sup><br>7/2 <sup>+</sup><br>9/2 <sup>+</sup>                     | D,E2<br>D,E2<br>D,E2<br>D,E2  |               |                                                                                                                                        |
| 1694.50                | 3/2 <sup>+</sup> ,5/2 <sup>(-)</sup> ,7/2 <sup>-</sup> | 1026.71 6<br>1047.94 6<br>1067.96 15<br>1358.07 10                                        | 31.6 5<br>27.1 5<br>21.1 9<br>20.2 6              | 667.80<br>646.52<br>626.79<br>336.40        | 5/2 <sup>-</sup><br>3/2 <sup>-</sup><br>5/2 <sup>+</sup><br>7/2 <sup>+</sup>                                     | D,E2<br>D,E2<br>D,E2<br>D,E2  |               |                                                                                                                                        |
| 1747.02                | (5/2) <sup>+</sup>                                     | 819.3 1<br>1120.3 2<br>1410.58 8<br>1747.0 3                                              | 15.1 23<br>20.4 8<br>63.9 8<br>0.58 17            | 927.74<br>626.79<br>336.40<br>0.0           | 3/2 <sup>+</sup><br>5/2 <sup>+</sup><br>7/2 <sup>+</sup><br>9/2 <sup>+</sup>                                     | D,E2<br>D,E2<br>D,E2<br>(E2)  |               | Mult.: Q from $\gamma(\theta)$ if 5/2. $\neq$ M2 from comparison to RUL.                                                               |
| 1785.19                | (7/2) <sup>+</sup>                                     | 1158.38 <sup>e</sup> 4<br>1449.01 15<br>1785.11 10                                        | 40.1 <sup>e</sup> 68<br>9.8 3<br>50.1 21          | 626.79<br>336.40<br>0.0                     | 5/2 <sup>+</sup><br>7/2 <sup>+</sup><br>9/2 <sup>+</sup>                                                         | D,E2<br>D,E2<br>D,E2          |               |                                                                                                                                        |
| 1837.71?               | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> )                  | 1501.3 <sup>f</sup> 3<br>1837.7 <sup>f</sup> 3                                            | 55 <sup>a</sup> 6<br>45 <sup>a</sup> 6            | 336.40<br>0.0                               | 7/2 <sup>+</sup><br>9/2 <sup>+</sup>                                                                             |                               |               |                                                                                                                                        |
| 1873.9?                | (7/2 <sup>+</sup> ,9/2 <sup>+</sup> )                  | 1873.9 <sup>bf</sup>                                                                      | 100 <sup>b</sup>                                  | 0.0                                         | 9/2 <sup>+</sup>                                                                                                 |                               |               |                                                                                                                                        |
| 1888.00?               | (5/2 <sup>-</sup> )                                    | 1261.2 <sup>df</sup> 2                                                                    | 100 <sup>db</sup>                                 | 626.79                                      | 5/2 <sup>+</sup>                                                                                                 |                               |               | Alternate placement suggested by <a href="#">1980Mi06</a> who measured a lower 1261 $\gamma$ threshold than <a href="#">1974Sa19</a> . |
| 1920.02                | (1/2 <sup>-</sup> ,3/2,5/2)                            | 644.30 <sup>c</sup> 10<br>992.33 <sup>df</sup> 70<br>1252.17 <sup>c</sup> 6<br>1273.39 15 | 5.7 6<br>6.7 <sup>d</sup> 9<br>67.1 14<br>20.5 38 | 1275.89<br>927.74<br>667.80<br>646.52       | (3/2 <sup>+</sup> ) <sup>+</sup><br>3/2 <sup>+</sup><br>5/2 <sup>-</sup><br>3/2 <sup>-</sup>                     | D,E2<br>D,E2<br>D,E2<br>D,E2  |               |                                                                                                                                        |
| 1920.99                | 9/2                                                    | 1584.59 10<br>1920.8 4                                                                    | 76.1 14<br>23.9 45                                | 336.40<br>0.0                               | 7/2 <sup>+</sup><br>9/2 <sup>+</sup>                                                                             | D,E2<br>D,E2                  |               |                                                                                                                                        |
| 1958.97                | (5/2 <sup>-</sup> )                                    | 1622.58 10<br>1958.74 30                                                                  | 66.7& 19<br>33.3 57                               | 336.40<br>0.0                               | 7/2 <sup>+</sup><br>9/2 <sup>+</sup>                                                                             | D(+Q) <sup>#</sup>            |               | $\delta$ : -0.07 12 or -4.0 +12-41 if 9/2 or $\leq$ -0.4 if 7/2.                                                                       |

$\gamma(^{95}\text{Tc})$  (continued)

| $E_i(\text{level})$ | $J_i^\pi$               | $E_\gamma$              | $I_\gamma^\dagger$       | $E_f$                      | $J_f^\pi$ | Mult. $^\ddagger$ |
|---------------------|-------------------------|-------------------------|--------------------------|----------------------------|-----------|-------------------|
| 1978.55             | $3/2^+, 5/2^+, 7/2^+$   | 893.86 10               | 10.7 <sup>a</sup> 11     | 1084.91 (5/2) <sup>+</sup> |           | D,E2              |
|                     |                         | 1050.75 5               | 66.6 <sup>a</sup> 10     | 927.74 $3/2^+$             |           | D,E2              |
|                     |                         | 1351.8 2                | 20.1 <sup>&amp;</sup> 12 | 626.79 $5/2^+$             |           | D,E2              |
|                     |                         | 1642.0 3                | 2.6 <sup>&amp;</sup> 2   | 336.40 $7/2^+$             |           | D,E2              |
| 2032.33             | $5/2^+, 7/2, 9/2^{(-)}$ | 1364.3 <sup>@bf</sup>   | 77.5 <sup>b</sup>        | 667.80 $5/2^-$             |           |                   |
|                     |                         | 1695.97 13              | 9.2 <sup>b</sup>         | 336.40 $7/2^+$             |           | D,E2              |
|                     |                         | 2031.8 4                | 13.3 <sup>b</sup>        | 0.0 $9/2^+$                |           | D,E2              |
|                     |                         | 652.72 5                | 20.2 <sup>a</sup> 15     | 1433.21 $5/2^+$            |           | D                 |
| 2086.02             | $3/2^+$                 | 1158.38 <sup>e</sup> 4  | 31.9 <sup>ea</sup> 30    | 927.74 $3/2^+$             |           | D,E2              |
|                     |                         | 1459.10 6               | 41.1 <sup>a</sup> 9      | 626.79 $5/2^+$             |           | D,E2              |
|                     |                         | 2046.9 2                | 6.8 <sup>a</sup> 3       | 38.89 $1/2^-$              |           | D,Q               |
|                     |                         | 2118.1 <sup>bf</sup>    | 100 <sup>b</sup>         | 0.0 $9/2^+$                |           |                   |
| 2164.1?             |                         | 1827.7 <sup>cf</sup> 16 | 42 16                    | 336.40 $7/2^+$             |           |                   |
| 2168.18             | $7/2^+$                 | 2164.1 <sup>cf</sup> 6  | 58 11                    | 0.0 $9/2^+$                |           |                   |
|                     |                         | 734.85 6                | 28.9 11                  | 1433.21 $5/2^+$            |           | D                 |
|                     |                         | 989.77 6                | 37.2 8                   | 1178.56 $7/2^+$            |           | D,E2              |
|                     |                         | 1240.4 2                | 4.2 <sup>&amp;</sup> 5   | 927.74 $3/2^+$             |           | E2                |
|                     |                         | 1541.27 10              | 15.2 8                   | 626.79 $5/2^+$             |           | D,E2              |
|                     |                         | 1831.7 2                | 12.7 <sup>&amp;</sup> 8  | 336.40 $7/2^+$             |           | D,E2              |
|                     |                         | 2168.27 30              | 1.8 <sup>&amp;</sup> 4   | 0.0 $9/2^+$                |           | D,Q               |
|                     |                         | 755.8 1                 | 17.2 25                  | 1433.21 $5/2^+$            |           | D,E2              |
| 2189.00             | $5/2^+, 7/2^+$          | 1010.44 8               | 45.9 12                  | 1178.56 $7/2^+$            |           | D,E2              |
|                     |                         | 1261.2 <sup>df</sup> 2  | 20.9 <sup>d</sup> 12     | 927.74 $3/2^+$             |           | D,E2              |
|                     |                         | 1562.35 20              | 5.7 8                    | 626.79 $5/2^+$             |           | D,E2              |
|                     |                         | 1852.5 2                | 7.8 4                    | 336.40 $7/2^+$             |           | D,E2              |
|                     |                         | 2188.9 2                | 2.5 4                    | 0.0 $9/2^+$                |           | D,Q               |
|                     |                         | 1874.3 <sup>c</sup> 4   | 86 3                     | 336.40 $7/2^+$             |           |                   |
|                     |                         | 2210.2 <sup>c</sup> 6   | 14 3                     | 0.0 $9/2^+$                |           |                   |
| 2219.59             | $(7/2^+)$               | 1291.4 3                | 73.3 53                  | 927.74 $3/2^+$             |           |                   |
|                     |                         | 1883.5 3                | 20.3 16                  | 336.40 $7/2^+$             |           |                   |
|                     |                         | 2219.9 <sup>c</sup> 5   | 6.4 19                   | 0.0 $9/2^+$                |           |                   |
|                     |                         | 1610.1 <sup>cf</sup> 2  | 100                      | 626.79 $5/2^+$             |           |                   |
| 2236.91?            | $(\geq 5/2)$            | 1904.3 <sup>cf</sup> 4  | 50 8                     | 336.40 $7/2^+$             |           |                   |
| 2240.6?             |                         | 2240.4 <sup>cf</sup> 5  | 50 13                    | 0.0 $9/2^+$                |           |                   |
| 2251.99             | $(7/2)^+$               | 1324.0 <sup>c</sup> 3   | 3.6 18                   | 927.74 $3/2^+$             |           |                   |
|                     |                         | 1625.1 3                | 20.5 2                   | 626.79 $5/2^+$             |           |                   |
|                     |                         | 2252.1 2                | 75.9 36                  | 0.0 $9/2^+$                |           |                   |
|                     |                         | 1088.9 2                | 27.6 <sup>a</sup> 20     | 1178.56 $7/2^+$            |           |                   |
| 2267.64             | $(7/2)^+$               | 1182.5 3                | 27.0 <sup>a</sup> 10     | 1084.91 (5/2) <sup>+</sup> |           |                   |

<sup>95</sup>Mo(p,n),(p,nγ) [1980Mi06](#),[1974Sa19](#),[1971Ki06](#) (continued)

γ(<sup>95</sup>Tc) (continued)

| E <sub>i</sub> (level) | J <sub>i</sub> <sup>π</sup> | E <sub>γ</sub>                   | I <sub>γ</sub> <sup>†</sup> | E <sub>f</sub> | J <sub>f</sub> <sup>π</sup> | E <sub>i</sub> (level) | J <sub>i</sub> <sup>π</sup>         | E <sub>γ</sub>        | I <sub>γ</sub> <sup>†</sup> | E <sub>f</sub> | J <sub>f</sub> <sup>π</sup> |
|------------------------|-----------------------------|----------------------------------|-----------------------------|----------------|-----------------------------|------------------------|-------------------------------------|-----------------------|-----------------------------|----------------|-----------------------------|
| 2267.64                | (7/2) <sup>+</sup>          | 1340.02 <sup>12</sup>            | 20.1 <sup>14</sup>          | 927.74         | 3/2 <sup>+</sup>            | 2318.3?                |                                     | 2317.5 <sup>f</sup> 8 | 13 <sup>4</sup>             | 0.0            | 9/2 <sup>+</sup>            |
|                        |                             | 1931.1 <sup>3</sup>              | 22.2 <sup>31</sup>          | 336.40         | 7/2 <sup>+</sup>            | 2324.40                | 5/2 <sup>+</sup> , 7/2 <sup>+</sup> | 1697.3 <sup>2</sup>   | 5.6 & <sup>1</sup>          | 626.79         | 5/2 <sup>+</sup>            |
|                        |                             | 2267.6 <sup>2</sup>              | 3.1 <sup>10</sup>           | 0.0            | 9/2 <sup>+</sup>            |                        |                                     | 1988.2 <sup>4</sup>   | 31.3 & <sup>12</sup>        | 336.40         | 7/2 <sup>+</sup>            |
| 2318.3?                |                             | 1982.1 <sup>f</sup> <sup>4</sup> | 87 <sup>13</sup>            | 336.40         | 7/2 <sup>+</sup>            |                        |                                     | 2324.6 <sup>2</sup>   | 63.1 & <sup>20</sup>        | 0.0            | 9/2 <sup>+</sup>            |

<sup>†</sup> % photon branching from each level.

<sup>‡</sup> From comparison to RUL, except as noted.

<sup>#</sup> From γ(θ). See [1974Sa19](#) for other solutions excluded by the adopted spins and parities.

<sup>@</sup> In coincidence with 627γ+629γ.

<sup>&</sup> From [1973Xe01](#).

<sup>a</sup> Iγ(1501γ)/Iγ(1837γ)=0.647, Iγ(893γ)/Iγ(1051γ)=0.077, Iγ(653γ):Iγ(1159γ):Iγ(1459γ):Iγ(2047)=20.2:19.5:52.6:7.7, and Iγ(1089γ)/Iγ(1183γ)=0.447 from [1980Mi06](#) are discrepant.

<sup>b</sup> From [1980Mi06](#).

<sup>c</sup> Not reported by [1980Mi06](#).

<sup>d</sup> Multiply placed with undivided intensity.

<sup>e</sup> Multiply placed with intensity suitably divided.

<sup>f</sup> Placement of transition in the level scheme is uncertain.

<sup>x</sup> γ ray not placed in level scheme.

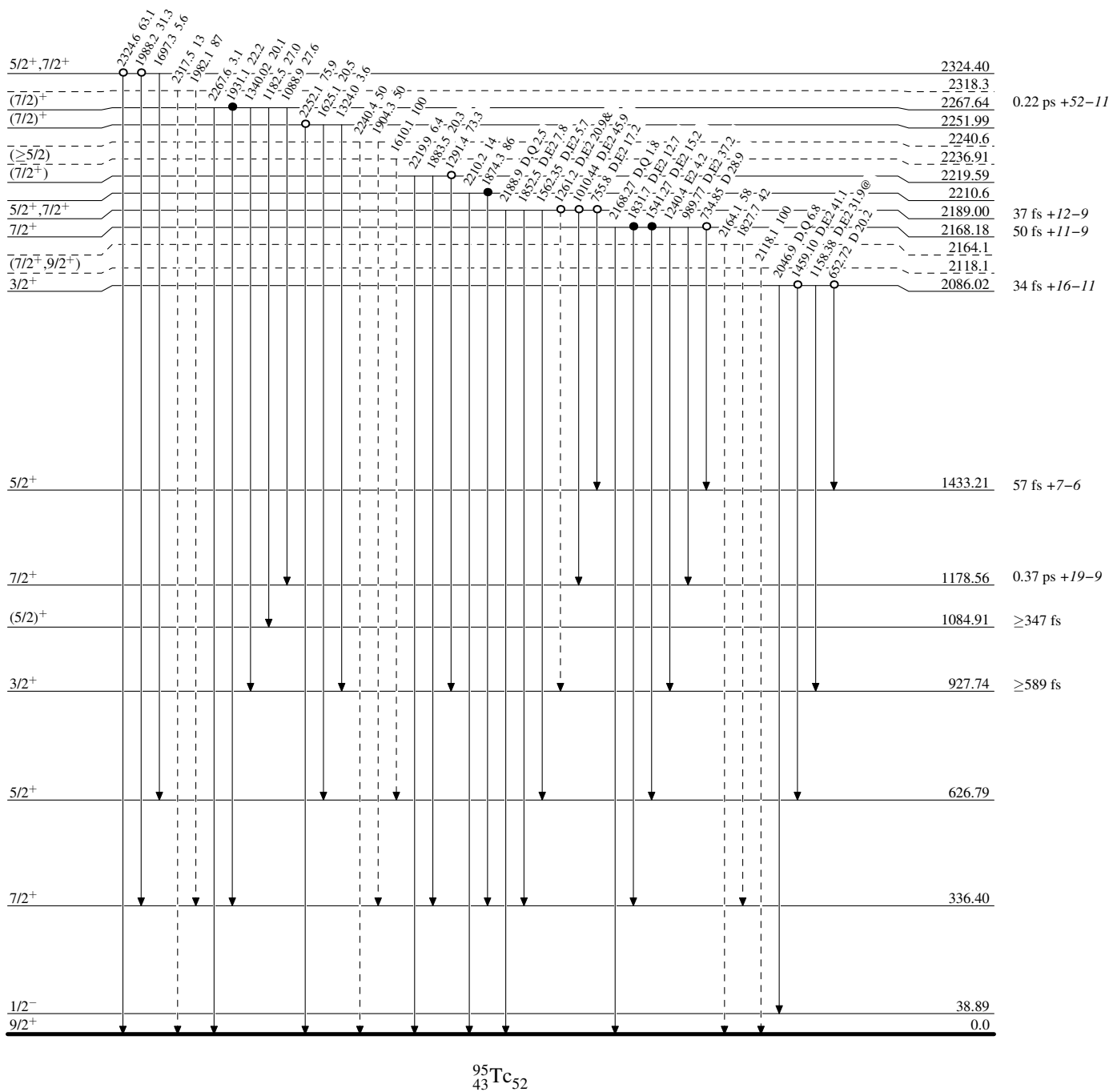
**$^{95}\text{Mo}(\text{p,n}),(\text{p,n}\gamma)$  1980Mi06,1974Sa19,1971Ki06**

Legend

**Level Scheme**

Intensities: % photon branching from each level  
& Multiply placed: undivided intensity given  
@ Multiply placed: intensity suitably divided

-----►  $\gamma$  Decay (Uncertain)  
● Coincidence  
○ Coincidence (Uncertain)



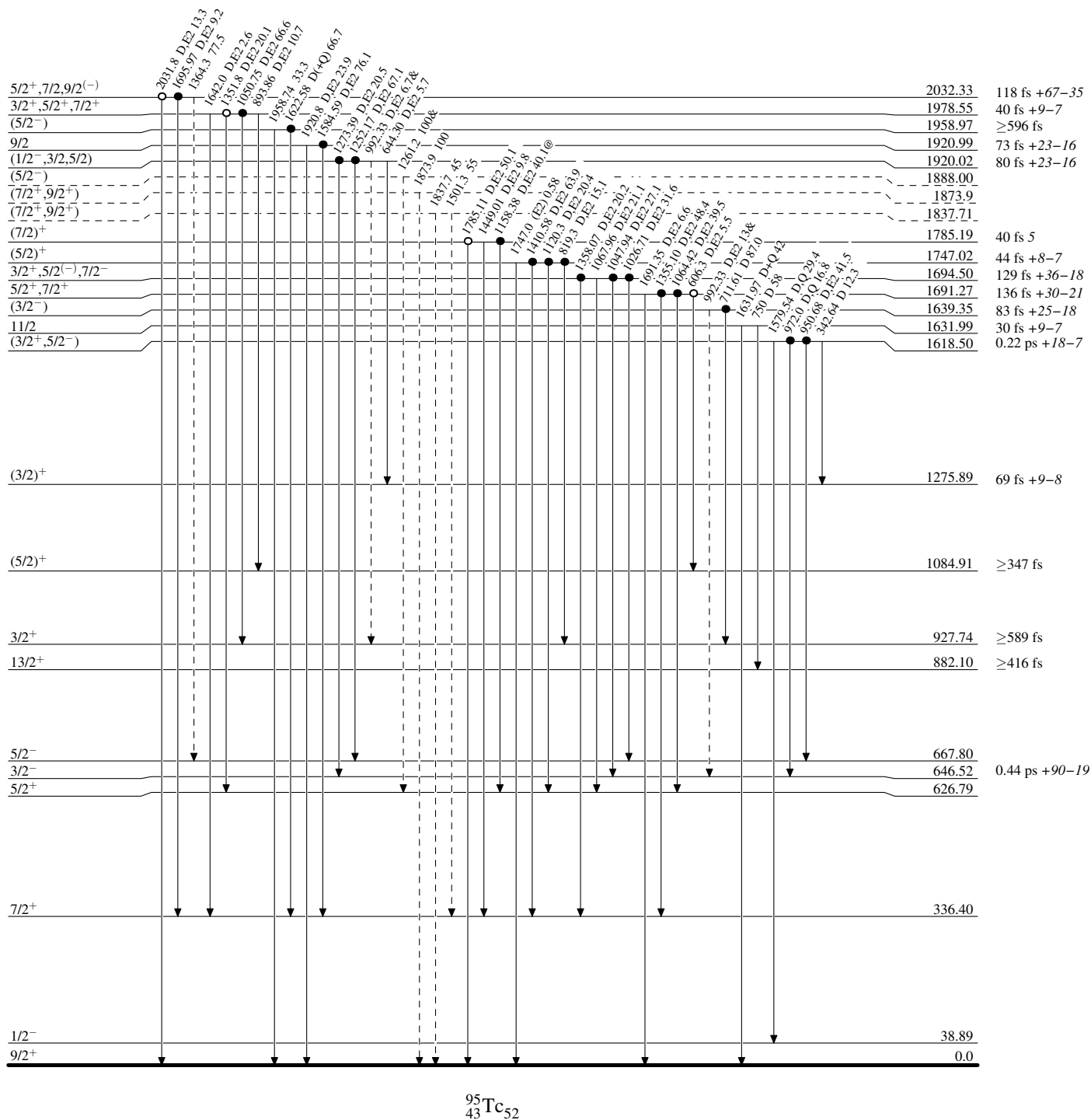
$^{95}\text{Mo}(\text{p,n}),(\text{p,n}\gamma)$  1980Mi06,1974Sa19,1971Ki06

Legend

## Level Scheme (continued)

Intensities: % photon branching from each level  
& Multiply placed: undivided intensity given  
@ Multiply placed: intensity suitably divided

-----►  $\gamma$  Decay (Uncertain)  
● Coincidence  
○ Coincidence (Uncertain)

 $^{95}_{43}\text{Tc}_{52}$

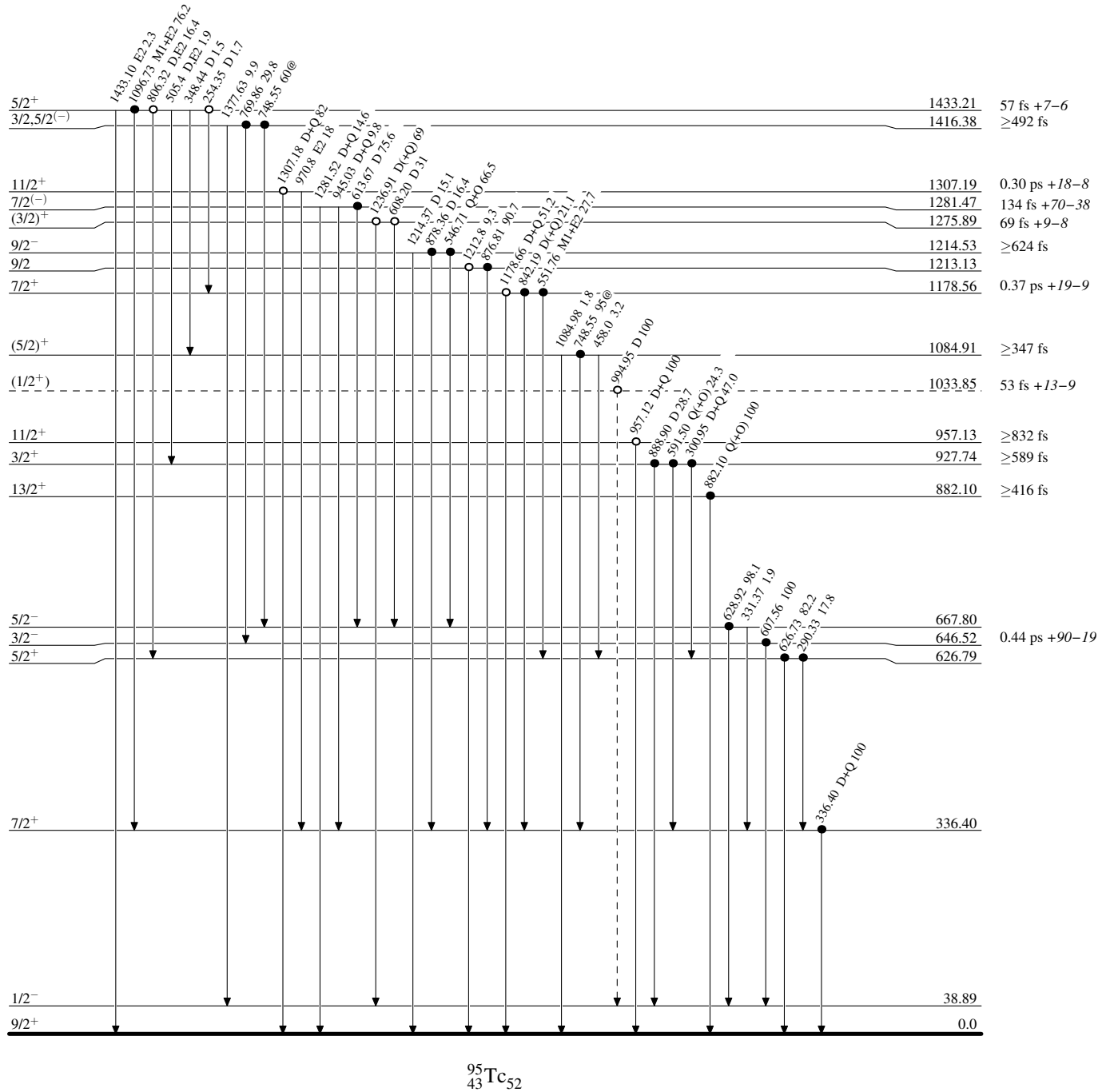
$^{95}\text{Mo}(\text{p},\text{n}),(\text{p},\text{n}\gamma)$  1980Mi06,1974Sa19,1971Ki06

Legend

## Level Scheme (continued)

Intensities: % photon branching from each level  
& Multiply placed: undivided intensity given  
@ Multiply placed: intensity suitably divided

-----►  $\gamma$  Decay (Uncertain)  
● Coincidence  
○ Coincidence (Uncertain)

 $^{95}_{43}\text{Tc}_{52}$