

TABLE 3. THERMODYNAMIC PROPERTIES OF WATER AT SATURATION\* (Continued)

| TABLE 3. THERMODYNAMIC PROPERTIES OF WATER AT SATURATED CONDITIONS |                                     |        |                               |                          |                              |                               |                          |                              |                               |                          |                              |                          |
|--------------------------------------------------------------------|-------------------------------------|--------|-------------------------------|--------------------------|------------------------------|-------------------------------|--------------------------|------------------------------|-------------------------------|--------------------------|------------------------------|--------------------------|
| FAHR.<br>TEMP.<br>t (°F)                                           | ABSOLUTE PRESSURE<br>p <sub>a</sub> |        | SPECIFIC VOLUME, CU FT PER LB |                          |                              |                               | ENTHALPY, BTU PER LB     |                              |                               |                          | ENTROPY, BTU PER (LB) (°F)   |                          |
|                                                                    | Lb/Sq In.                           | In. Hg | Sat. Liquid<br>v <sub>f</sub> | Evap.<br>v <sub>fg</sub> | Sat. Vapor<br>v <sub>g</sub> | Sat. Liquid<br>h <sub>f</sub> | Evap.<br>h <sub>fg</sub> | Sat. Vapor<br>h <sub>g</sub> | Sat. Liquid<br>s <sub>f</sub> | Evap.<br>s <sub>fg</sub> | Sat. Vapor<br>s <sub>g</sub> | FAHR.<br>TEMP.<br>t (°F) |
| 122                                                                | 1.7897                              | 3.6493 | 0.01631                       | 192.85                   | 162.87                       | 89.98                         | 1024.12                  | 1114.10                      | 0.16805                       | 1.7696                   | 1.9256                       | 122                      |
| 123                                                                | 1.8396                              | 3.7455 | 0.01632                       | 187.93                   | 157.95                       | 90.98                         | 1023.54                  | 1114.52                      | 0.16877                       | 1.7695                   | 1.9256                       | 123                      |
| 124                                                                | 1.8907                              | 3.8496 | 0.01633                       | 183.15                   | 153.17                       | 91.98                         | 1022.96                  | 1114.94                      | 0.17148                       | 1.7683                   | 1.9241                       | 124                      |
| 125                                                                | 1.9430                              | 3.9601 | 0.01634                       | 178.61                   | 148.53                       | 92.98                         | 1022.39                  | 1115.37                      | 0.17483                       | 1.7668                   | 1.9218                       | 125                      |
| 126                                                                | 1.9966                              | 4.0774 | 0.01635                       | 174.00                   | 144.02                       | 93.98                         | 1021.81                  | 1115.79                      | 0.17860                       | 1.7646                   | 1.9195                       | 126                      |
| 127                                                                | 2.0514                              | 4.1768 | 0.01636                       | 169.63                   | 139.65                       | 94.97                         | 1021.24                  | 1116.21                      | 0.18283                       | 1.7620                   | 1.9173                       | 127                      |
| 128                                                                | 2.1075                              | 4.2910 | 0.01637                       | 165.38                   | 135.40                       | 95.97                         | 1020.66                  | 1116.63                      | 0.18750                       | 1.7587                   | 1.9150                       | 128                      |
| 129                                                                | 2.1649                              | 4.4078 | 0.01638                       | 161.29                   | 131.27                       | 96.97                         | 1020.08                  | 1117.05                      | 0.19260                       | 1.7558                   | 1.9128                       | 129                      |
| 130                                                                | 2.2237                              | 4.5274 | 0.01639                       | 157.35                   | 127.27                       | 97.97                         | 1019.50                  | 1117.47                      | 0.19803                       | 1.7528                   | 1.9105                       | 130                      |
| 131                                                                | 2.2838                              | 4.6498 | 0.01640                       | 153.55                   | 123.35                       | 98.97                         | 1018.92                  | 1117.89                      | 0.20378                       | 1.7493                   | 1.9084                       | 131                      |
| 132                                                                | 2.3452                              | 4.7750 | 0.01641                       | 149.85                   | 119.60                       | 99.97                         | 1018.34                  | 1118.31                      | 0.20993                       | 1.7451                   | 1.9062                       | 132                      |
| 133                                                                | 2.4081                              | 4.9030 | 0.01642                       | 146.31                   | 115.93                       | 100.97                        | 1017.76                  | 1118.72                      | 0.21647                       | 1.7405                   | 1.9040                       | 133                      |
| 134                                                                | 2.4725                              | 5.0340 | 0.01643                       | 142.84                   | 112.38                       | 101.97                        | 1017.18                  | 1119.13                      | 0.22339                       | 1.7356                   | 1.9018                       | 134                      |
| 135                                                                | 2.5383                              | 5.1679 | 0.01644                       | 139.43                   | 108.96                       | 102.97                        | 1016.59                  | 1119.55                      | 0.23069                       | 1.7303                   | 1.8996                       | 135                      |
| 136                                                                | 2.6055                              | 5.3049 | 0.01645                       | 136.07                   | 105.52                       | 103.97                        | 1016.01                  | 1119.98                      | 0.23837                       | 1.7246                   | 1.8974                       | 136                      |
| 137                                                                | 2.6743                              | 5.4451 | 0.01646                       | 132.72                   | 102.24                       | 104.97                        | 1015.43                  | 1120.40                      | 0.24643                       | 1.7188                   | 1.8953                       | 137                      |
| 138                                                                | 2.7446                              | 5.5881 | 0.01647                       | 129.44                   | 99.07                        | 105.97                        | 1014.85                  | 1120.82                      | 0.25486                       | 1.7129                   | 1.8931                       | 138                      |
| 139                                                                | 2.8165                              | 5.7345 | 0.01648                       | 126.24                   | 95.78                        | 106.97                        | 1014.26                  | 1121.23                      | 0.26366                       | 1.7063                   | 1.8910                       | 139                      |
| 140                                                                | 2.8900                              | 5.8842 | 0.01649                       | 123.04                   | 92.50                        | 107.96                        | 1013.68                  | 1121.65                      | 0.27282                       | 1.7005                   | 1.8889                       | 140                      |
| 141                                                                | 2.9651                              | 6.0371 | 0.01650                       | 120.01                   | 89.03                        | 108.96                        | 1013.11                  | 1122.07                      | 0.28234                       | 1.6966                   | 1.8867                       | 141                      |
| 142                                                                | 3.0419                              | 6.1934 | 0.01651                       | 117.16                   | 85.18                        | 109.96                        | 1012.52                  | 1122.48                      | 0.29221                       | 1.6892                   | 1.8846                       | 142                      |
| 143                                                                | 3.1204                              | 6.3532 | 0.01652                       | 114.40                   | 81.42                        | 110.96                        | 1011.94                  | 1122.89                      | 0.30243                       | 1.6815                   | 1.8825                       | 143                      |
| 144                                                                | 3.2004                              | 6.5164 | 0.01653                       | 111.70                   | 77.72                        | 111.96                        | 1011.35                  | 1123.31                      | 0.31300                       | 1.6733                   | 1.8804                       | 144                      |
| 145                                                                | 3.2820                              | 6.6832 | 0.01654                       | 109.09                   | 74.07                        | 112.96                        | 1010.77                  | 1123.73                      | 0.32392                       | 1.6648                   | 1.8783                       | 145                      |
| 146                                                                | 3.3652                              | 6.8536 | 0.01655                       | 106.54                   | 70.56                        | 113.96                        | 1010.18                  | 1124.14                      | 0.33519                       | 1.6567                   | 1.8763                       | 146                      |
| 147                                                                | 3.4517                              | 7.0277 | 0.01656                       | 104.09                   | 67.14                        | 114.96                        | 1009.59                  | 1124.55                      | 0.34681                       | 1.6481                   | 1.8742                       | 147                      |
| 148                                                                | 3.5420                              | 7.2056 | 0.01657                       | 101.66                   | 63.76                        | 115.96                        | 1009.01                  | 1124.97                      | 0.35878                       | 1.6391                   | 1.8721                       | 148                      |
| 149                                                                | 3.6362                              | 7.3873 | 0.01658                       | 99.30                    | 60.40                        | 116.96                        | 1008.42                  | 1125.38                      | 0.37110                       | 1.6300                   | 1.8701                       | 149                      |
| 150                                                                | 3.7344                              | 7.5727 | 0.01659                       | 97.03                    | 57.05                        | 117.96                        | 1007.83                  | 1125.79                      | 0.38377                       | 1.6209                   | 1.8680                       | 150                      |
| 151                                                                | 3.8124                              | 7.7622 | 0.01660                       | 94.79                    | 53.73                        | 118.96                        | 1007.24                  | 1126.20                      | 0.39679                       | 1.6107                   | 1.8660                       | 151                      |

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| FAHR.<br>TEMP.<br>t (°F) | ABSOLUTE PRESSURE<br>p <sub>a</sub> |        | SPECIFIC VOLUME CU FT PER LB  |                          |                              |                               |                          | ENTHALPY, BTU PER LB         |                               |                          |                              | ENTROPY, BTU PER (LB) (°F) |  |  |  |
|--------------------------|-------------------------------------|--------|-------------------------------|--------------------------|------------------------------|-------------------------------|--------------------------|------------------------------|-------------------------------|--------------------------|------------------------------|----------------------------|--|--|--|
|                          | Lb/Sq In.                           | In. Hg | Sat. Liquid<br>v <sub>f</sub> | Evap.<br>v <sub>fg</sub> | Sat. Vapor<br>v <sub>g</sub> | Sat. Liquid<br>h <sub>f</sub> | Evap.<br>h <sub>fg</sub> | Sat. Vapor<br>h <sub>g</sub> | Sat. Liquid<br>s <sub>f</sub> | Evap.<br>s <sub>fg</sub> | Sat. Vapor<br>s <sub>g</sub> | FAHR.<br>TEMP.<br>t (°F)   |  |  |  |
| 152                      | 3.9074                              | 7.8556 | 0.01635                       | 92.635                   | 92.651                       | 119.95                        | 1006.66                  | 1126.62                      | 0.21830                       | 1.6467                   | 1.8640                       | 152                        |  |  |  |
| 153                      | 4.0044                              | 8.1532 | 0.01636                       | 90.528                   | 90.544                       | 120.97                        | 1006.05                  | 1127.03                      | 0.21994                       | 1.6421                   | 1.8620                       | 153                        |  |  |  |
| 154                      | 4.1035                              | 8.3848 | 0.01638                       | 88.477                   | 88.493                       | 121.97                        | 1005.47                  | 1127.44                      | 0.22157                       | 1.6384                   | 1.8600                       | 154                        |  |  |  |
| 155                      | 4.2048                              | 8.5697 | 0.01637                       | 86.480                   | 86.496                       | 122.97                        | 1004.88                  | 1127.85                      | 0.22320                       | 1.6348                   | 1.8580                       | 155                        |  |  |  |
| 156                      | 4.3078                              | 8.7708 | 0.01637                       | 84.536                   | 84.552                       | 123.97                        | 1004.29                  | 1128.26                      | 0.22482                       | 1.6312                   | 1.8560                       | 156                        |  |  |  |
| 157                      | 4.4132                              | 8.9853 | 0.01638                       | 82.642                   | 82.658                       | 124.97                        | 1003.70                  | 1128.67                      | 0.22645                       | 1.6276                   | 1.8540                       | 157                        |  |  |  |
| 158                      | 4.5207                              | 9.2042 | 0.01639                       | 80.793                   | 80.814                       | 125.97                        | 1003.11                  | 1129.08                      | 0.22807                       | 1.6239                   | 1.8520                       | 158                        |  |  |  |
| 159                      | 4.6304                              | 9.4276 | 0.01639                       | 79.001                   | 79.017                       | 126.97                        | 1002.51                  | 1129.48                      | 0.22969                       | 1.6204                   | 1.8501                       | 159                        |  |  |  |
| 160                      | 4.7424                              | 9.6566 | 0.01639                       | 77.251                   | 77.267                       | 127.97                        | 1001.92                  | 1129.89                      | 0.23130                       | 1.6168                   | 1.8481                       | 160                        |  |  |  |
| 161                      | 4.8566                              | 9.8892 | 0.01640                       | 75.546                   | 75.562                       | 128.97                        | 1001.33                  | 1130.30                      | 0.23292                       | 1.6133                   | 1.8462                       | 161                        |  |  |  |
| 162                      | 4.9732                              | 10.126 | 0.01640                       | 73.885                   | 73.901                       | 128.97                        | 1000.74                  | 1130.71                      | 0.23453                       | 1.6097                   | 1.8442                       | 162                        |  |  |  |
| 163                      | 5.0921                              | 10.368 | 0.01641                       | 72.267                   | 72.283                       | 130.98                        | 1000.13                  | 1131.11                      | 0.23614                       | 1.6062                   | 1.8423                       | 163                        |  |  |  |
| 164                      | 5.2132                              | 10.615 | 0.01641                       | 70.690                   | 70.706                       | 131.98                        | 999.54                   | 1131.52                      | 0.23774                       | 1.6027                   | 1.8404                       | 164                        |  |  |  |
| 165                      | 5.3372                              | 10.866 | 0.01642                       | 69.153                   | 69.169                       | 132.98                        | 998.95                   | 1131.93                      | 0.23934                       | 1.5992                   | 1.8384                       | 165                        |  |  |  |
| 166                      | 5.4634                              | 11.124 | 0.01643                       | 67.653                   | 67.670                       | 133.98                        | 998.35                   | 1132.33                      | 0.24095                       | 1.5956                   | 1.8365                       | 166                        |  |  |  |
| 167                      | 5.5921                              | 11.386 | 0.01643                       | 66.194                   | 66.210                       | 134.98                        | 997.76                   | 1132.73                      | 0.24255                       | 1.5920                   | 1.8346                       | 167                        |  |  |  |
| 168                      | 5.7233                              | 11.653 | 0.01644                       | 64.770                   | 64.786                       | 135.98                        | 997.16                   | 1133.14                      | 0.24414                       | 1.5887                   | 1.8328                       | 168                        |  |  |  |
| 169                      | 5.8572                              | 11.925 | 0.01644                       | 63.382                   | 63.398                       | 136.99                        | 996.55                   | 1133.54                      | 0.24574                       | 1.5852                   | 1.8309                       | 169                        |  |  |  |
| 170                      | 5.9936                              | 12.203 | 0.01645                       | 62.029                   | 62.045                       | 137.99                        | 995.95                   | 1133.94                      | 0.24733                       | 1.5817                   | 1.8290                       | 170                        |  |  |  |
| 171                      | 6.1328                              | 12.487 | 0.01645                       | 60.710                   | 60.726                       | 138.99                        | 995.36                   | 1134.35                      | 0.24892                       | 1.5782                   | 1.8271                       | 171                        |  |  |  |
| 172                      | 6.2746                              | 12.775 | 0.01646                       | 59.423                   | 59.439                       | 139.99                        | 994.76                   | 1134.75                      | 0.25051                       | 1.5746                   | 1.8252                       | 172                        |  |  |  |
| 173                      | 6.4192                              | 13.070 | 0.01647                       | 58.168                   | 58.184                       | 141.00                        | 994.15                   | 1135.15                      | 0.25209                       | 1.5710                   | 1.8233                       | 173                        |  |  |  |
| 174                      | 6.5666                              | 13.370 | 0.01647                       | 56.944                   | 56.960                       | 142.00                        | 993.55                   | 1135.55                      | 0.25367                       | 1.5675                   | 1.8214                       | 174                        |  |  |  |
| 175                      | 6.7168                              | 13.676 | 0.01648                       | 55.750                   | 55.766                       | 143.00                        | 992.95                   | 1135.95                      | 0.25525                       | 1.5640                   | 1.8195                       | 175                        |  |  |  |
| 176                      | 6.8699                              | 13.987 | 0.01648                       | 54.586                   | 54.602                       | 144.00                        | 992.35                   | 1136.35                      | 0.25683                       | 1.5611                   | 1.8176                       | 176                        |  |  |  |
| 177                      | 7.0259                              | 14.305 | 0.01649                       | 53.450                   | 53.466                       | 145.00                        | 991.75                   | 1136.75                      | 0.25841                       | 1.5577                   | 1.8156                       | 177                        |  |  |  |
| 178                      | 7.1849                              | 14.629 | 0.01650                       | 52.341                   | 52.357                       | 146.01                        | 991.14                   | 1137.15                      | 0.25998                       | 1.5543                   | 1.8137                       | 178                        |  |  |  |
| 179                      | 7.3469                              | 14.959 | 0.01650                       | 51.260                   | 51.276                       | 147.01                        | 990.54                   | 1137.55                      | 0.26155                       | 1.5508                   | 1.8124                       | 179                        |  |  |  |
| 180                      | 7.5119                              | 15.295 | 0.01651                       | 50.203                   | 50.220                       | 148.01                        | 989.93                   | 1137.95                      | 0.26312                       | 1.5475                   | 1.8106                       | 180                        |  |  |  |
| 181                      | 7.6801                              | 15.637 | 0.01651                       | 49.173                   | 49.190                       | 149.02                        | 989.32                   | 1138.34                      | 0.26469                       | 1.5441                   | 1.8089                       | 181                        |  |  |  |

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