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**MEMO CP-N/64**

**DATE:** 6 November 2007  
**TO:** See distribution list below  
**FROM:** H. Henriksson  
**SUBJECT:** List of MLT usage and UNIT addition (Dictionary 25)

Dear colleagues,

Below follows a list of how MLT is used in EXFOR. This is to give some background to the discussion on EXFOR 22960 in batch PRELIM.2187, and from the working paper WP2007-19. A new unit code is also proposed according to the conclusion C15 from the last NRDC meeting: PT/RCT/MEV (particle per reaction per MeV)

Best wishes,  
/ Hans Henriksson

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Reference of MLT to SF3 or to SF4. SF3 = Fission and X

|                                     |         |         |                       |   |         |         |                     |
|-------------------------------------|---------|---------|-----------------------|---|---------|---------|---------------------|
| 1) 3-LI-0(A,X)0-NN-1,,MLT,,TT,DERIV |         |         |                       | 18) 7-N-0(P,X)6-C-11,PAR,MLT,G,TT       |         |         |                     |
| 1 C0595004 1979 J.K.Bair+           | 3.50e+6 | 1       | J,NSE,71,18,1979      | 18 O1234004 1985 V.A.Kuz`menko+         | 9.10e+6 | 1       | J,JRN,89,447,1985   |
| 2) 3-LI-0(P,X)0-NN-1,,MLT,,TT       |         |         |                       | 19) 8-O-0(P,X)7-N-13,PAR,MLT,G,TT       |         |         |                     |
| 2 O0116016 1970 V.K.Daruga+         | 2.35e+7 | 1       | J,AE,29,456,70        | 19 O1234005 1985 V.A.Kuz`menko+         | 9.10e+6 | 1       | J,JRN,89,447,1985   |
| 3) 3-LI-6(A,X)0-NN-1,,MLT,,TT       |         |         |                       | 20) 8-O-CMP(A,X)0-NN-1,,MLT,,TT         |         |         |                     |
| 3 C0595002 1979 J.K.Bair+           | 7.00e+6 | 1       | J,NSE,71,18,1979      | 20 F0341007 1983 G.J.H.Jacobs+          | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983 |
| 4) 3-LI-7(A,X)0-NN-1,,MLT,,TT       |         |         |                       | 21) 9-F-19(A,X)0-NN-1,,MLT,,TT          |         |         |                     |
| 4 C0595003 1979 J.K.Bair+           | 3.50e+6 | 1       | J,NSE,71,18,1979      | 21 C0595009 1979 J.K.Bair+              | 3.50e+6 | 1       | J,NSE,71,18,1979    |
| 5) 4-BE-9(A,X)0-NN-1,,MLT,,TT       |         |         |                       | 22) 9-F-CMP(A,X)0-NN-1,,MLT,,TT         |         |         |                     |
| 5 C0595005 1979 J.K.Bair+           | 3.00e+6 | 1       | J,NSE,71,18,1979      | 22 F0341009 1983 G.J.H.Jacobs+          | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983 |
| 6) 4-BE-9(P,X)0-NN-1,,MLT,,TT       |         |         |                       | 23) 12-MG-0(A,X)0-NN-1,,MLT,,TT         |         |         |                     |
| 6 O0116002 1970 V.K.Daruga+         | 1.15e+7 | 2.35e+7 | 2 J,AE,29,456,70      | 23 F0341011 1983 G.J.H.Jacobs+          | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983 |
| 7) 5-B-0(A,X)0-NN-1,,MLT,,TT        |         |         |                       | 24) 12-MG-0(P,X)0-NN-1,,MLT,,TT         |         |         |                     |
| 7 C0595008 1979 J.K.Bair+           | 3.50e+6 | 1       | J,NSE,71,18,1979      | 24 C0595010 1979 J.K.Bair+              | 4.00e+6 | 1       | J,NSE,71,18,1979    |
| 8) 5-B-0(P,X)6-C-11,PAR,MLT,G,TT    |         |         |                       | 25) 13-AL-27(A,X)0-NN-1,,MLT,,TT        |         |         |                     |
| 8 O1234002 1985 V.A.Kuz`menko+      | 9.10e+6 | 1       | J,JRN,89,447,1985     | 25 F0341013 1983 G.J.H.Jacobs+          | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983 |
| 9) 5-B-10(A,X)0-NN-1,,MLT,,TT       |         |         |                       | 26) 13-AL-27(P,X)0-NN-1,,MLT,,TT        |         |         |                     |
| 9 C0595006 1979 J.K.Bair+           | 3.50e+6 | 1       | J,NSE,71,18,1979      | 26 O0116004 1970 V.K.Daruga+            | 1.15e+7 | 2.35e+7 | 2 J,AE,29,456,70    |
| 10) 5-B-11(A,X)0-NN-1,,MLT,,TT      |         |         |                       | 27) 14-SI-0(A,X)0-NN-1,,MLT,,TT         |         |         |                     |
| 10 C0595007 1979 J.K.Bair+          | 3.50e+6 | 1       | J,NSE,71,18,1979      | 27 F0341015 1983 G.J.H.Jacobs+          | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983 |
| 11) 5-B-CMP(A,X)0-NN-1,,MLT,,TT     |         |         |                       | 28) 16-S-0(P,X)17-CL-34-M,PAR,MLT,G,TT  |         |         |                     |
| 11 F0341003 1983 G.J.H.Jacobs+      | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983   | 28 O1234006 1985 V.A.Kuz`menko+         | 9.10e+6 | 1       | J,JRN,89,447,1985   |
| 12) 6-C-0(A,X)0-NN-1,,MLT,,TT       |         |         |                       | 29) 20-CA-0(P,X)21-SC-44-G,PAR,MLT,G,TT |         |         |                     |
| 12 F0341005 1983 G.J.H.Jacobs+      | 4.00e+6 | 5.50e+6 | 4 J,ANE,10,541,1983   | 29 O1234007 1985 V.A.Kuz`menko+         | 9.10e+6 | 1       | J,JRN,89,447,1985   |
| 13) 6-C-0(P,X)7-N-13,PAR,MLT,G,TT   |         |         |                       | 30) 22-TI-0(P,X)0-NN-1,,MLT,,TT         |         |         |                     |
| 13 O1234003 1985 V.A.Kuz`menko+     | 9.10e+6 | 1       | J,JRN,89,447,1985     | 30 O0116006 1970 V.K.Daruga+            | 1.15e+7 | 2.35e+7 | 2 J,AE,29,456,70    |
| 14) 6-C-12(P,X)0-NN-1,,MLT,,TT      |         |         |                       | 31) 24-CR-0(P,X)25-MN-52-M,PAR,MLT,G,TT |         |         |                     |
| 14 O0116003 1970 V.K.Daruga+        | 1.15e+7 | 2.35e+7 | 2 J,AE,29,456,70      |   |         |         |                     |
| 15) 6-C-12(P,X)1-H-1,,MLT,P         |         |         |                       |   |         |         |                     |
| 15 O0837008 1991 M.Trzaska+         | 8.00e+8 | 1.60e+9 | 2 J,ZP/A,340,325,1991 |   |         |         |                     |
| 16) 6-C-12(P,X)1-PN-0,,MLT,PIN      |         |         |                       |   |         |         |                     |
| 16 O0837008 1991 M.Trzaska+         | 8.00e+8 | 1.60e+9 | 2 J,ZP/A,340,325,1991 |   |         |         |                     |
| 17) 6-C-12(P,X)1-PP-0,,MLT,PIP      |         |         |                       |   |         |         |                     |
| 17 O0837008 1991 M.Trzaska+         | 8.00e+8 | 1.60e+9 | 2 J,ZP/A,340,325,1991 |   |         |         |                     |

34 O1234008 1985 V.A.Kuz`menko+ 9.10e+6 2  
J,JRN,89,447,1985

32) 26-FE-0(N,X)0-G-0,,MLT,G,AV

35 30801004 1983 S.Hlavac+ 1.46e+7 3 R,INDC(CSR)-  
5,8311

36 30571005 1979 R.Antalik+ 1.46e+7 1  
C,79SMOLENIC,6,277,7906

33) 26-FE-0(N,X)0-NN-1,,MLT,G

37 30801005 1983 S.Hlavac+ 1.46e+7 9 R,INDC(CSR)-  
5,8311

34) 26-FE-0(P,X)0-NN-1,,MLT,,TT

38 O0116017 1970 V.K.Daruga+ 2.35e+7 1 J,AE,29,456,70

35) 28-NI-0(N,X)0-G-0,,MLT,G,AV

39 30801007 1983 S.Hlavac+ 1.46e+7 7 R,INDC(CSR)-  
5,8311

36) 28-NI-0(P,X)0-NN-1,,MLT,,TT

40 O0116008 1970 V.K.Daruga+ 1.15e+7 2.35e+7 2 J,AE,29,456,70

37) 28-NI-0(P,X)29-CU-60,PAR,MLT,G,TT

41 O1234009 1985 V.A.Kuz`menko+ 9.10e+6 3  
J,JRN,89,447,1985

38) 28-NI-58(N,X)0-NN-1,,MLT,G

42 30801008 1983 S.Hlavac+ 1.46e+7 8 R,INDC(CSR)-  
5,8311

39) 29-CU-0(P,X)0-NN-1,,MLT,,TT

43 O0116018 1970 V.K.Daruga+ 2.35e+7 1 J,AE,29,456,70

40) 29-CU-0(P,X)30-ZN-63,PAR,MLT,G,TT

44 O1234010 1985 V.A.Kuz`menko+ 9.10e+6 2  
J,JRN,89,447,1985

41) 30-ZN-0(P,X)0-NN-1,,MLT,,TT

45 O0116009 1970 V.K.Daruga+ 1.15e+7 2.35e+7 2 J,AE,29,456,70

42) 30-ZN-0(P,X)31-GA-66,PAR,MLT,G,TT

46 O1234011 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

43) 30-ZN-0(P,X)31-GA-68,PAR,MLT,G,TT

47 O1234012 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

44) 31-GA-0(P,X)32-GE-69,PAR,MLT,G,TT

48 O1234013 1985 V.A.Kuz`menko+ 9.10e+6 2  
J,JRN,89,447,1985

45) 32-GE-0(P,X)33-AS-70,PAR,MLT,G,TT

49 O1234014 1985 V.A.Kuz`menko+ 9.10e+6 8  
J,JRN,89,447,1985

46) 32-GE-0(P,X)33-AS-72,PAR,MLT,G,TT

50 O1234015 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

47) 32-GE-0(P,X)33-AS-76,PAR,MLT,G,TT

51 O1234016 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

48) 37-RB-0(P,X)38-SR-85-M,PAR,MLT,G,TT

52 O1234017 1985 V.A.Kuz`menko+ 9.10e+6 2  
J,JRN,89,447,1985

49) 37-RB-0(P,X)38-SR-87-M,PAR,MLT,G,TT

53 O1234018 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

50) 38-SR-0(P,X)39-Y-86-M,PAR,MLT,G,TT

54 O1234019 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

51) 38-SR-0(P,X)39-Y-87-M,PAR,MLT,G,TT

55 O1234020 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

52) 40-ZR-0(P,X)41-NB-90-G,PAR,MLT,G,TT

56 O1234022 1985 V.A.Kuz`menko+ 9.10e+6 3  
J,JRN,89,447,1985

53) 41-NB-93(P,X)0-NN-1,,MLT,,TT

57 O0116010 1970 V.K.Daruga+ 1.15e+7 2.35e+7 2  
J,AE,29,456,70

54) 41-NB-93(P,X)1-H-1,,MLT,P

58 O0837009 1991 M.Trzaska+ 8.00e+8 1.60e+9 2  
J,ZP/A,340,325,1991

55) 41-NB-93(P,X)1-PN-0,,MLT,PIN

59 O0837009 1991 M.Trzaska+ 8.00e+8 1.60e+9 2  
J,ZP/A,340,325,1991

56) 41-NB-93(P,X)1-PP-0,,MLT,PIP

60 O0837009 1991 M.Trzaska+ 8.00e+8 1.60e+9 2  
J,ZP/A,340,325,1991

57) 42-MO-0(P,X)43-TC-95-G,PAR,MLT,G,TT

61 O1234024 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

58) 44-RU-0(P,X)45-RH-99-M,PAR,MLT,G,TT

62 O1234025 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

59) 47-AG-0(P,X)48-CD-107,PAR,MLT,G,TT

63 O1234026 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

60) 48-CD-0(P,X)0-NN-1,,MLT,,TT

64 O0116011 1970 V.K.Daruga+ 1.15e+7 2.35e+7 2  
J,AE,29,456,70

61) 48-CD-0(P,X)49-IN-110-G,PAR,MLT,G,TT

65 O1234027 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

62) 48-CD-0(P,X)49-IN-111-M,PAR,MLT,G,TT

66 O1234028 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

63) 48-CD-0(P,X)49-IN-112-M,PAR,MLT,G,TT

67 O1234029 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

64) 48-CD-0(P,X)49-IN-113-M,PAR,MLT,G,TT

68 O1234030 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

65) 50-SN-0(P,X)51-SB-116-G,PAR,MLT,G,TT

69 O1234032 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

66) 50-SN-0(P,X)51-SB-117,PAR,MLT,G,TT

70 O1234033 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

67) 52-TE-0(P,X)53-I-128,PAR,MLT,G,TT

71 O1234034 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

68) 60-ND-0(P,X)61-PM-150,PAR,MLT,G,TT

72 O1234036 1985 V.A.Kuz`menko+ 9.10e+6 1  
J,JRN,89,447,1985

69) 73-TA-181(P,X)0-NN-1,,MLT,,TT

73 O0116012 1970 V.K.Daruga+ 1.15e+7 2.35e+7 2 J,AE,29,456,70

70) 74-W-0(P,X)0-NN-1,,MLT

74 C0554003 1998 M.S.Zucker+ 8.00e+8 1.40e+9 3  
J,NSE,129,180,1998

71) 74-W-0(P,X)0-NN-1,,MLT,,TT

75 O0116013 1970 V.K.Daruga+ 1.15e+7 1 J,AE,29,456,70

72) 82-PB-0(P,X)0-NN-1,,MLT

76 C0554002 1998 M.S.Zucker+ 8.00e+8 1.40e+9 4  
J,NSE,129,180,1998

73) 82-PB-0(P,X)0-NN-1,,MLT,,TT

77 O0116019 1970 V.K.Daruga+ 2.35e+7 1 J,AE,29,456,70

74) 82-PB-0(P,X)1-H-1,,MLT,P

78 O0837010 1991 M.Trzaska+ 8.00e+8 1.60e+9 2  
J,ZP/A,340,325,1991

75) 82-PB-0(P,X)1-PN-0,,MLT,PIN

79 O0837010 1991 M.Trzaska+ 8.00e+8 1.60e+9 2  
J,ZP/A,340,325,1991

76) 82-PB-0(P,X)1-PP-0,,MLT,PIP

80 O0837010 1991 M.Trzaska+ 8.00e+8 1.60e+9 2  
J,ZP/A,340,325,1991

77) 82-PB-208(AP,X)0-NN-1,,MLT,N,TT

81 O0953022 1998 D.Hilscher+ 3.29e+9 5.88e+9 3  
J,NIM/A,414,100,1998

78) 82-PB-208(D,X)0-NN-1,,MLT,N,TT

82 O0953021 1998 D.Hilscher+ 8.92e+8 3.44e+9 4  
J,NIM/A,414,100,1998

79) 82-PB-208(KP,X)0-NN-1,,MLT,N,TT

83 O0953020 1998 D.Hilscher+ 2.51e+9 1  
J,NIM/A,414,100,1998

80) 82-PB-208(P,X)0-NN-1,,MLT,N

84 O0953016 1998 D.Hilscher+ 4.15e+9 10  
J,NIM/A,414,100,1998

81) 82-PB-208(P,X)0-NN-1,,MLT,N,TT

85 O0953018 1998 D.Hilscher+ 1.16e+9 4.11e+9 5  
J,NIM/A,414,100,1998

82) 82-PB-208(PIN,X)0-NN-1,,MLT,N,TT

86 O0953023 1998 D.Hilscher+ 3.88e+9 4.87e+9 2  
J,NIM/A,414,100,1998

83) 82-PB-208(PIP,X)0-NN-1,,MLT,N,TT

87 O0953019 1998 D.Hilscher+ 1.84e+9 4.80e+9 4  
J,NIM/A,414,100,1998

84) 83-BI-209(P,X)0-NN-1,,MLT,,TT

88 O0116014 1970 V.K.Daruga+ 1.15e+7 1 J,AE,29,456,70

85) 92-U-0(P,X)0-NN-1,,MLT,,TT

89 O0116015 1970 V.K.Daruga+ 1.15e+7 2.35e+7 2  
J,AE,29,456,70

86) 92-U-238(P,F),,MLT,N

90 O0941004 2001 V.A.Rubchenya+ 2.00e+7 6.00e+7 4  
J,NIM/A,463,653,2001

87) 92-U-238(P,F)MASS,,MLT,N/FF

91 O0941003 2001 V.A.Rubchenya+ 2.00e+7 6.00e+7 76  
J,NIM/A,463,653,2001

88) 92-U-238(P,X)0-NN-1,,MLT,N,TT

92 O0953024 1998 D.Hilscher+ 1.23e+9 4.17e+9 3  
J,NIM/A,414,100,1998

89) 92-U-238(PIP,X)0-NN-1,,MLT,N,TT

93 O0953025 1998 D.Hilscher+ 3.90e+9 4.88e+9 2  
J,NIM/A,414,100,1998

90) 98-CF-252(0,F)ELEM,,MLT,G,AV

94 30968002 1991 Raghav Varma+ 9  
J,PR/C,43,(4),1850,9104