Draft version 2: list of minerals in Tetracorder 5.2a command file that need quantitative XRD to support EMIT mapping:

Group priority for XRD and SEM (do in this order):

1. Hematite
2. Goethite
3. Montmorillonite
4. Kaolinite
5. Illite
6. Calcite
7. Dolomite
8. Chlorite
9. Gypsum
10. Vermiculite

For XRD. (61 samples):

Blue = top priority within an individual group

Black = 2nd priority within a group

For SEM. (18 samples):

\* = top priority

\* = 2nd priority

Red = don’t need XRD or SEM on these. (14 samples so 75-14 = 61 samples for XRD)

Calcite Group:

1. Calcite WS272
2. Calcite+Talc PC99-1G
3. Dolomit+Calcite+Talc PC99-1E

Chlorite Group:

4) Chlorite SMR-13.b 60-104um

5) Chlorite\_Serpentine BR93-22B

1. Muscovite+Chlorite CU91-253D
2. Clinochlore GDS158 Flagstaff
3. Clinochlore\_Fe GDS157
4. Clinochlore\_Fe SC-CCa-1.b
5. Cookeite CAr-1.a 104-150um
6. Cookeite CAr-1.c <30um
7. Thuringite SMR-15.b
8. Prehnite GDS613.a <60um
9. Chlorite SMR-13.a

Dolomite Group:

1. Dolomite HS102.3B

Goethite Group (all measured on SEM):

1. Goethite-all-for-reference.group1.txt
2. Lepidocrosite GDS80 (Syn)\*
3. Goethite WS222 (need to xrd and SEM med- and coarse-grained samples)\*
4. Goethite0.02+Quartz GDS240 (used in AMIX11 which includes Syn Jarosite GDS99)
5. Goethite MPCMA2-C M-Crsgrad2 (natural rock coating)\*
6. Chlorite+Goethite CU93-4B Phyllite\*
7. Goethite MPCMA2-B FineGr (natural rock coating)\*
8. Muscovite-medhi-Al CU91-252D (natural rock coating)\*

Gypsum Group:

1. Gypsum HS333.3B (Selenite)
2. Gyp+jar+ill BRCM1 Marysvale
3. WTC\_Dust\_Debris WTC01-2
4. WTC\_Dust\_Debris WTC01-28
5. Coated\_Steel\_Girder WTC01-8

Hematite Group. (all measured on SEM):

1. Nanohematite BR93-34B2 (natural rock coating)\*
2. Hematite FE2602 (CSES sample – we may no long have it)\*
3. Hematite WS161\*
4. Hematite.02+Quartz.98 GDS76 (physical mixture good for testing accuracy of quant xrd)\*
5. Hematite GDS27\*
6. Magnetite\_skarn BR93-5B (possible rock coating)\*
7. Basalt\_weathered BR93-43 (color of rock itself due to weathering)\*
8. Hematite\_Coatd\_Qtz BR93-25B (natural rock coating)\*
9. Hematite\_Coatd\_Qtzt BR93-25A (natural rock coating)\*
10. Hematite\_Coatd\_Qtzt BR93-25C (natural rock coating)\*
11. Hematite\_Coatd\_Qtz BR93-34C (natural rock coating)\*
12. Nanohematite BR93-34B2 (natural rock coating)\*
13. Maghemite GDS81 Syn (M-3)\*

Illite Group:

1. Muscovite GDS113
2. Illite IMt-1.b <2um
3. Illite GDS4 (Marblehead)
4. Gyp+jar+ill BRCM1 Marysvale
5. Ammonio-Illite/Smectit GDS87 (may have quant XRD already)
6. Roscoelite EN124

Montmorillonite Group:

1. Montmorillonite SAz-1
2. Montmorillonite SWy-1
3. Montmorillonite\_Fe GDS759A (not in library)
4. Pyrophyllite PYS1A (in AMX16 with SAz-1 montmorillonite)
5. Buddingtnt+Na-Mont CU93-260B (intimate mix in rock)
6. Cheat Grass + 0.17% Na-Montmorillonite SWy-1 AMX35 (unsure if wt%) Ray says make new AMX with less noisy cheat grass
7. Montmorill+Benzene SWy 1ml (hazardous)
8. Montmorill+Trichlor SWy 1ml (hazardous)
9. Montmorill+Toluene SWy .5ml (hazardous)
10. Montmorill+Unleaded\_Gas SWy (hazardous)
11. Montmorill+TCE SWy saturated (hazardous)

Kaolinite Group:

1. Kaolinite CM9
2. Kaolinite KGa-1
3. Dickite NMNH106242
4. Kaolinite KGa-2 (pxl)
5. Halloysite NMNH106237
6. Kaolin\_Smect H89-FR-2 .5Kaol. (CSES sample that we may not have)
7. Kaolin\_Smect H89-FR-5 .3Kaol. (CSES sample that we may not have)
8. Alunite HS295.3B (as component in AMX3 and AMX14)
9. Kalun+kaol+gth mv2-ar3 (Marysvale natural mixture with goethite)
10. Alun\_Na+Kaol+Hemat MV00-11a (Marysvale Nat. mix with goethite)
11. Medlow Al-muscovite CU91-250A (AMX13 with Kaolinite KGa-1 and AMX2)
12. Kaol+Musc\_intimate CU93-5C (natural intimate mixture in rock)
13. Alunite+Dickite MV99-6-26b (nat. intimate mix rock with gypsum)

Vermiculite Group:

1. Vermiculite Russia GDS458 (vermiculite + hydrobiotite + phlogopite?)
2. Vermiculite WS681 (vermiculite with hydrobiotite)
3. Vermiculite WS682 (vermiculite + hydrobiotite + phlogopite?)
4. Vermiculite ALB5SA00 (vermiculite ore – Palabora)