

12 GeV Responsibility Assignment Matrix - AY\$M

BAC October 13

| CAM | Scope | CDR/R&D | | PED | | Const | | Pre-Ops | | Total |
|----------------------|-----------------|---------|-------------------|---------|-------------------|-------|--------------------|---------|-------------------|--------------------|
| | | WBS | \$K | WBS | \$K | WBS | \$K | WBS | \$K | \$K |
| John Hogan | Cryomodules | 1.1.1.1 | \$1,535.1 | 1.2.1.1 | \$820.9 | 1.3.1 | \$25,723.3 | | | \$28,079.3 |
| Bill Merz | Power Systems | 1.1.1.2 | \$1,053.1 | 1.2.1.2 | \$2,258.0 | 1.3.2 | \$19,021.6 | | | \$22,332.8 |
| Dana Arenius | Cryogenics | 1.1.1.3 | | 1.2.1.3 | \$1,276.2 | 1.3.3 | \$25,754.0 | | | \$27,030.3 |
| Mike Bevins | Beam Transport | 1.1.1.4 | \$240.3 | 1.2.1.4 | \$3,300.9 | 1.3.4 | \$24,727.1 | | | \$28,268.4 |
| Mike Spata | Extraction | 1.1.1.5 | | 1.2.1.5 | \$471.1 | 1.3.5 | \$604.9 | | | \$1,075.9 |
| Mike Spata | Accel Sys Comm | | | 1.2.6 | \$64.9 | | | | | \$64.9 |
| Mike Spata | I&C | 1.1.1.6 | | 1.2.1.6 | \$994.0 | 1.3.6 | \$7,898.4 | | | \$8,892.4 |
| John LeRose | Hall A | 1.1.2 | \$83.1 | 1.2.2.1 | \$173.2 | 1.4.1 | \$667.7 | | | \$924.1 |
| Latifa Elouadrhiri | Hall B | 1.1.3 | \$1,331.7 | 1.2.2.2 | \$3,063.2 | 1.4.2 | \$59,803.1 | | | \$64,198.0 |
| Howard Fenker | Hall C | 1.1.4 | \$467.1 | 1.2.2.3 | \$1,767.8 | 1.4.3 | \$30,286.5 | | | \$32,521.3 |
| Eugene Chudakov | Hall D | 1.1.5 | \$1,848.3 | 1.2.3 | \$2,956.4 | 1.5 | \$40,007.7 | | | \$44,812.4 |
| Leigh Harwood | Accel Comm. | | | | | | | 1.8.1 | \$5,021.3 | \$5,021.3 |
| Glenn Young | Physics Comm. | | | | | | | 1.8.2 | \$2,027.7 | \$2,027.7 |
| Rebecca Yasky | Civil | 1.1.6 | \$55.4 | 1.2.4 | \$1,210.0 | 1.6 | \$30,347.3 | | | \$31,612.8 |
| Claus Rode | Proj Management | 1.1.7 | \$437.3 | 1.2.5 | \$2,636.8 | 1.7 | \$9,171.3 | 1.8.3 | \$5,068.7 | \$17,314.1 |
| Other | CDR/ACD | 1.0 | \$3,445.1 | | | | | | | \$3,445.1 |
| Subtotal | | | \$10,496.6 | | \$20,993.4 | | \$274,012.9 | | \$12,117.7 | \$317,620.6 |
| Contingency | | | \$3.4 | | \$6.6 | | \$15,487.1 | | \$4,882.3 | \$20,379.4 |
| Total Project | | | \$10,500.0 | | \$21,000.0 | | \$289,500.0 | | \$17,000.0 | \$338,000.0 |

12 GeV Responsibility Assignment Matrix - \$K

| WBS | WBS Title | ORGANIZATION | | | | | | | | | | | | | TOTAL |
|---------------------|---|---|--|--|--------------------------------------|--|--------------------------|-----------------------|--------------------|----------------|--------------|----------------|---------------|---------------|--------|
| | | JLab Institute for SRF Science & Technology | JLab Engineering Division Electrical Systems Support | JLab Engineering Division Mechanical Engineering | JLab Engineering Division Cryogenics | JLab Center for Advanced Studies of Accelerators | JLab Experimental Hall A | 12 GeV Project Office | 12 GeV Accelerator | 12 GeV Physics | 12 GeV Civil | 12 GeV Hall B | 12 GeV Hall C | 12 GeV Hall D | |
| | | J. Hogan | B. Merz | M. Bevins | D. Arenius | M. Spata | J. LeRose | C. Rode | L. Harwood | G. Young | R. Yasky | L. Elouadrhiri | H. Fenker | E. Chudakov | \$K |
| ACD/CDR | | | | | | | | | | | | | | | |
| 1.0 | | | | | | | | 3,445 | | | | | | | 3,445 |
| R&D | | | | | | | | | | | | | | | |
| 1.1.1.1 | R&D Accel Systems Cryomodules | 1,535 | | | | | | | | | | | | | 1,535 |
| 1.1.1.2 | R&D Accel Systems Power Systems | | 1,053 | | | | | | | | | | | | 1,053 |
| 1.1.1.4 | R&D Accel Systems Beam Transport | | | 240 | | | | | | | | | | | 240 |
| 1.1.2 | R&D Hall A | | | | | | 83 | | | | | | | | 83 |
| 1.1.3 | R&D Hall B | | | | | | | | | | 1,332 | | | | 1,332 |
| 1.1.4 | R&D Hall C | | | | | | | | | | | | 467 | | 467 |
| 1.1.5 | R &D Hall D | | | | | | | | | | | | | 1,848 | 1,848 |
| 1.1.6 | R&D Civil | | | | | | | | | | 55 | | | | 55 |
| 1.1.7 | R&D Project Management | | | | | | | 437 | | | | | | | 437 |
| PED | | | | | | | | | | | | | | | |
| 1.2.1.1 | PED Accel Systems Cryomodules | 821 | | | | | | | | | | | | | 821 |
| 1.2.1.2 | PED Accel Systems Power Systems | | 2,258 | | | | | | | | | | | | 2,258 |
| 1.2.1.3 | PED Accel Systems Cryogenics | | | | 1,276 | | | | | | | | | | 1,276 |
| 1.2.1.4 | PED Accel Systems Beam Transport | | | 3,301 | | | | | | | | | | | 3,301 |
| 1.2.1.5 | PED Accel Systems Extraction | | | | | 471 | | | | | | | | | 471 |
| 1.2.1.6 | PED Accel Systems Instrumentation, Controls, and Safety Systems | | | | | 994 | | | | | | | | | 994 |
| 1.2.2.1 | PED Upgrade Hall A | | | | | | 173 | | | | | | | | 173 |
| 1.2.2.2 | PED Upgrade Hall B | | | | | | | | | | 3,063 | | | | 3,063 |
| 1.2.2.3 | PED Upgrade Hall C | | | | | | | | | | | | 1,768 | | 1,768 |
| 1.2.3 | PED Hall D | | | | | | | | | | | | | 2,956 | 2,956 |
| 1.2.4 | PED Conventional Facilities | | | | | | | | | | 1,210 | | | | 1,210 |
| 1.2.5 | PED Project Management | | | | | | | 2,637 | | | | | | | 2,637 |
| 1.2.6 | PED Accelerator Systems Commissioning Planning | | | | | 65 | | | | | | | | | 65 |
| Construction | | | | | | | | | | | | | | | |
| 1.3.1.1 | Construction Accel Systems Cryomodules Procurements | 20,760 | | | | | | | | | | | | | 20,760 |
| 1.3.1.2 | Construction Accel Systems Cavity String Assembly | 1,316 | | | | | | | | | | | | | 1,316 |
| 1.3.1.3 | Construction Accel Systems Cryomodule Assembly | 2,333 | | | | | | | | | | | | | 2,333 |
| 1.3.1.4 | Construction Accel Systems Acceptance Testing | 668 | | | | | | | | | | | | | 668 |
| 1.3.1.5 | Construction Accel Systems Installation | 357 | | | | | | | | | | | | | 357 |
| 1.3.1.6 | Construction Accel Systems Microphonics | 290 | | | | | | | | | | | | | 290 |
| 1.3.2.1.1 | Construction Accel Systems Power Systems RF Power | | 8,836 | | | | | | | | | | | | 8,836 |
| 1.3.2.1.2 | Construction Accel Systems Power Systems RF Control | | 2,559 | | | | | | | | | | | | 2,559 |
| 1.3.2.1.3 | Construction Accel Systems RF Installation & System Commissioning | | 246 | | | | | | | | | | | | 246 |
| 1.3.2.2 | Construction Accel Systems Magnet Power | | 7,380 | | | | | | | | | | | | 7,380 |

12 GeV Responsibility Assignment Matrix - \$K

| WBS | WBS Title | ORGANIZATION | | | | | | | | | | | | | |
|---------|--|---|--|--|--------------------------------------|--|--------------------------|-----------------------|--------------------|----------------|--------------|----------------|---------------|---------------|--------|
| | | JLab Institute for SRF Science & Technology | JLab Engineering Division Electrical Systems Support | JLab Engineering Division Mechanical Engineering | JLab Engineering Division Cryogenics | JLab Center for Advanced Studies of Accelerators | JLab Experimental Hall A | 12 GeV Project Office | 12 GeV Accelerator | 12 GeV Physics | 12 GeV Civil | 12 GeV Hall B | 12 GeV Hall C | 12 GeV Hall D | TOTAL |
| | | J. Hogan | B. Merz | M. Bevins | D. Arenius | M. Spata | J. LeRose | C. Rode | L. Harwood | G. Young | R. Yasky | L. Elouadrhiri | H. Fenker | E. Chudakov | \$K |
| 1.3.3.1 | Construction Accel Systems Cryogenics Accelerator | | | | 22,958 | | | | | | | | | | 22,958 |
| 1.3.3.2 | Construction Accel Systems Hall D | | | | 2,796 | | | | | | | | | | 2,796 |
| 1.3.4.1 | Construction Accel Systems Beam Transport Spreaders & Recombiners | | | 11,546 | | | | | | | | | | | 11,546 |
| 1.3.4.2 | Construction Accel Systems Beam Transport Existing Arcs (1-9, A, B, & C) | | | 6,172 | | | | | | | | | | | 6,172 |
| 1.3.4.3 | Construction Accel Systems Beam Transport Linacs | | | 349 | | | | | | | | | | | 349 |
| 1.3.4.4 | Construction Accel Systems Beam Transport Injector & Re-injection | | | 332 | | | | | | | | | | | 332 |
| 1.3.4.5 | Construction Accel Systems Beam Transport Arc 10 & Hall D Beamline | | | 5,636 | | | | | | | | | | | 5,636 |
| 1.3.4.6 | Construction Accel Systems Transport Channel Magnets and Stands | | | 692 | | | | | | | | | | | 692 |
| 1.3.5.1 | Construction Accel Systems Extraction Cavities | | | | | 329 | | | | | | | | | 329 |
| 1.3.5.2 | Construction Accel Systems Extraction RF Components | | | | | 188 | | | | | | | | | 188 |
| 1.3.5.3 | Construction Accel Systems Extraction Resonance Control | | | | | 60 | | | | | | | | | 60 |
| 1.3.5.4 | Construction Accel Systems Extraction Lambertson | | | | | 3 | | | | | | | | | 3 |
| 1.3.5.5 | Construction Accel Systems Extraction Septa and Dipoles | | | | | 0 | | | | | | | | | 0 |
| 1.3.5.6 | Construction Accel Systems Extraction Stands | | | | | 26 | | | | | | | | | 26 |
| 1.3.6.1 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Beam Diagnostics | | | | | 3,241 | | | | | | | | | 3,241 |
| 1.3.6.2 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Control System Hardware | | | | | 515 | | | | | | | | | 515 |
| 1.3.6.3 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Control System Software | | | | | 363 | | | | | | | | | 363 |
| 1.3.6.4 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Safety Systems | | | | | 2,291 | | | | | | | | | 2,291 |
| 1.3.6.5 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Insertable Dump | | | | | 221 | | | | | | | | | 221 |
| 1.3.6.6 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Vacuum Controls | | | | | 1,005 | | | | | | | | | 1,005 |
| 1.3.6.7 | Construction Accel Systems Instrumentation, Controls, and Safety Systems Magnet Instrumentation | | | | | 263 | | | | | | | | | 263 |
| 1.4.1 | Construction Hall A | | | | | | 668 | | | | | | | | 668 |
| 1.4.2.1 | Construction Hall B Magnet | | | | | | | | | | | 5,709 | | | 5,709 |
| 1.4.2.2 | Construction Hall B Detectors | | | | | | | | | | | 23,684 | | | 23,684 |

12 GeV Responsibility Assignment Matrix - \$K

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|----------------|--|---|--|--|--------------------------------------|--|--------------------------|-----------------------|--------------------|----------------|---------------|----------------|---------------|---------------|----------------|
| | | JLab Institute for SRF Science & Technology | JLab Engineering Division Electrical Systems Support | JLab Engineering Division Mechanical Engineering | JLab Engineering Division Cryogenics | JLab Center for Advanced Studies of Accelerators | JLab Experimental Hall A | 12 GeV Project Office | 12 GeV Accelerator | 12 GeV Physics | 12 GeV Civil | 12 GeV Hall B | 12 GeV Hall C | 12 GeV Hall D | |
| | | J. Hogan | B. Merz | M. Bevins | D. Arenius | M. Spata | J. LeRose | C. Rode | L. Harwood | G. Young | R. Yasky | L. Elouadrhiri | H. Fenker | E. Chudakov | \$K |
| 1.4.2.3 | Construction Hall B Computing | | | | | | | | | | | 1,662 | | | 1,662 |
| 1.4.2.4 | Construction Hall B Electronics | | | | | | | | | | | 3,360 | | | 3,360 |
| 1.4.2.5 | Construction Hall B Beamline | | | | | | | | | | | 544 | | | 544 |
| 1.4.2.6 | Construction Hall B Infrastructure | | | | | | | | | | | 4,178 | | | 4,178 |
| 1.4.2.7 | Construction Hall B Magnets New Vendor | | | | | | | | | | | 20,666 | | | 20,666 |
| 1.4.3.1 | Construction Hall C Magnet | | | | | | | | | | | | 18,470 | | 18,470 |
| 1.4.3.2 | Construction Hall C Detector | | | | | | | | | | | | 945 | | 945 |
| 1.4.3.3 | Construction Hall C Computing | | | | | | | | | | | | 51 | | 51 |
| 1.4.3.4 | Construction Hall C Electronics | | | | | | | | | | | | 384 | | 384 |
| 1.4.3.5 | Construction Hall C Beamline | | | | | | | | | | | | 828 | | 828 |
| 1.4.3.6 | Construction Hall C Infrastructure | | | | | | | | | | | | 9,608 | | 9,608 |
| 1.5.1 | Construction Hall D Solenoid | | | | | | | | | | | | | 3,094 | 3,094 |
| 1.5.2 | Construction Hall D Detectors | | | | | | | | | | | | | 13,321 | 13,321 |
| 1.5.3 | Construction Hall D Computing | | | | | | | | | | | | | 2,985 | 2,985 |
| 1.5.4 | Construction Hall D Electronics | | | | | | | | | | | | | 8,826 | 8,826 |
| 1.5.5 | Construction Hall D Beamline | | | | | | | | | | | | | 5,233 | 5,233 |
| 1.5.6 | Construction Hall D Infrastructure | | | | | | | | | | | | | 6,488 | 6,488 |
| 1.5.7 | Construction Hall D Spare Solenoid | | | | | | | | | | | | | 60 | 60 |
| 1.6.1 | Construction Conventional Facilities Accelerator | | | | | | | | | | 5,608 | | | | 5,608 |
| 1.6.2 | Construction Conventional Facilities CHL | | | | | | | | | | 4,366 | | | | 4,366 |
| 1.6.3 | Construction Conventional Facilities Hall D | | | | | | | | | | 20,373 | | | | 20,373 |
| 1.7 | Construction Project Management | | | | | | | 9,171 | | | | | | | 9,171 |
| Pre-Ops | | | | | | | | | | | | | | | |
| 1.8.1.1 | Accelerator Pre-Ops Beam Commissioning | | | | | | | | 1,100 | | | | | | 1,100 |
| 1.8.1.2 | Accelerator Pre-Ops Utilities | | | | | | | | 2,427 | | | | | | 2,427 |
| 1.8.1.3.1 | Accelerator Cryomodules Pre-Ops | | | | | | | | 278 | | | | | | 278 |
| 1.8.1.3.2 | Accelerator Power Pre-Ops Checkout | | | | | | | | 409 | | | | | | 409 |
| 1.8.1.3.3 | Accelerator Cryogenics Pre-Ops Checkout | | | | | | | | 807 | | | | | | 807 |
| 1.8.2.1 | Hall A Checkout & Beam Commissioning | | | | | | | | | 14 | | | | | 14 |
| 1.8.2.2 | Hall B Checkout & Beam Commissioning | | | | | | | | | 626 | | | | | 626 |
| 1.8.2.3 | Hall C Checkout & Beam Commissioning | | | | | | | | | 247 | | | | | 247 |
| 1.8.2.4 | Hall D Checkout & Beam Commissioning | | | | | | | | | 1,141 | | | | | 1,141 |
| 1.8.3 | Pre-Ops Support - Project Office | | | | | | | 5,069 | | | | | | | 5,069 |
| | Total | 28,079 | 22,333 | 28,268 | 27,030 | 10,033 | 924 | 20,759 | 5,021 | 2,028 | 31,613 | 64,198 | 32,521 | 44,812 | 317,621 |

12 GeV Non-DOE Responsibility Assignment Matrix - \$K

| WBS | WBS Title | ORGANIZATION | | | | | | | | | | | | | TOTAL |
|-----------------|-------------------------------------|---|--|--|--------------------------------------|--|--------------------------|-----------------------|--------------------|----------------|--------------|----------------|---------------|---------------|-------|
| | | JLab Institute for SRF Science & Technology | JLab Engineering Division Electrical Systems Support | JLab Engineering Division Mechanical Engineering | JLab Engineering Division Cryogenics | JLab Center for Advanced Studies of Accelerators | JLab Experimental Hall A | 12 GeV Project Office | 12 GeV Accelerator | 12 GeV Physics | 12 GeV Civil | 12 GeV Hall B | 12 GeV Hall C | 12 GeV Hall D | |
| | | J. Hogan | B. Merz | M. Bevins | D. Arenius | M. Spata | J. LeRose | C. Rode | L. Harwood | G. Young | R. Yasky | L. Elouadrhiri | H. Fenker | E. Chudakov | \$K |
| VA State | | | | | | | | | | | | | | | |
| 1.9.5.1 | 12 GeV Hall D Solenoid | | | | | | | | | | | | | 199 | 199 |
| 1.9.5.2 | 12 GeV Hall D Detectors | | | | | | | | | | | | | 4,281 | 4,281 |
| 1.9.6.1 | 12 GeV N&S LCW | | | | | | | | | | 3,429 | | | | 3,429 |
| 1.9.7.1 | 12 GeV Miscellaneous Infrastructure | | | | | | | 1,004 | | | | | | | 1,004 |
| NSF | | | | | | | | | | | | | | | |
| 1.10 | Non DOE Scope | | | | | | | | | 624 | | | | | 624 |
| | Total | - | - | - | - | - | - | 1,004 | - | 624 | 3,429 | - | - | 4,281 | 9,338 |