

National Radio Astronomy Observatory, Socorro, NM 87801

Very Large Array Program

VLA ELECTRONICS MEMORANDUM NO. 218

THE ANTENNA SYSTEM DATASET EPROM UPGRADE

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The DCS Lab will soon upgrade all Datasets to be universal, so that they can be plugged into any location without the need to exchange the Dataset Eprom. A few locations such as the Master Racks and Antennas with special test hardware will have a Dataset set aside for those locations.

Before this upgrade takes place, I have decided to go through the existing Dataset Eprom for Datasets 1 thru 5 in order to add, remove or to redefine monitor points. For each Dataset I have written down the removed addresses, added addresses, Redefined addresses and addresses with required timing characteristics.

Please review my work carefully so that the DCS Lab will not have to update 160 Eproms/Datasets again anytime soon.

Attached: Dataset Eprom Address Pattern (1-5)

Dataset 1

Removed Addresses:

'044, '045 '046, '047, '102, '103, '124, '125, '126, '127, '156, '157, '176, and '177

Added Addresses:

'120 F3 PLL IN-PHASE VOLTAGE
'121 F3 PLL QUADRATURE VOLTAGE
'122 F3 ATTENUATOR
'123 F3 MIXER CURRENT
'140 AB L BAND HEMT LED VOLTAGE
'141 AB C BAND HEMT LED VOLTAGE
'142 AB U BAND HEMT LED VOLTAGE
'143 AB K BAND HEMT LED VOLTAGE
'154 AB K BAND STAGE 4 BIAS
'160 CD L BAND HEMT LED VOLTAGE
'161 CD C BAND HEMT LED VOLTAGE
'162 CD U BAND HEMT LED VOLTAGE
'163 CD K BAND HEMT LED VOLTAGE
'174 CD K BAND STAGE 4 BIAS

Redefined Addresses:

'144 is now '153
'145 is now '152
'146 is now '151
'147 is now '150
'164 is now '173
'165 is now '172
'166 is now '171
'167 is now '170

Timed Addresses:

'000, 001, '002, '003, '004, '005, '006, '007, '020, '021, '022, '023, '024, '025, '026, and '027 Repeat Every 16 Waveguide Cycles.

Dataset 2

Removed Addresses:

'120, '121, '122, '123, '124, '125, '126, '127, '160, '161, '162, '163, '164, '165, '166, '167, '242, '243, '246, '247, '251, '253, '255, and '257.

Added Addresses:

None

Timed Addresses:

'241, '245, and '267 Repeat Every 24 Waveguide Cycles.

Dataset 3

Removed Addresses:

None

Added Addresses:

None

Redefined Addresses:

None

Timed Addresses:

None

Dataset 4

Note: The FE Lab is currently starting to retrofit the antennas with the F14 module which will replace the C1 Module. Because of this, the monitor system for Dataset 4 is in a state of transition. All of the addresses below reflect the F14 module.

Removed Addresses:

None

Added Addresses:

'140 GND
'141 +10V
'142 -10V
'143 GND
'144 +15V/2
'145 -15V/2
'146 +5V
'147 +28V/4
'150 +15v Critical/2
'151 -15V Critical/2
'152 Pump Current
'153 He Supply Pressure
'154 He Return Pressure
'155 GND (Spare)
'156 GND (Spare)
'157 GND (Spare)
'225 FE B Digital Monitor Points (VLBA Stle L-Band)
'226 FE C Digital Monitor Points (Future K-Band)

Redefined Addresses:

None

Timed Addresses:

None

Dataset 5

Removed Addresses:

'116

Added Addresses:

None

Redefined Addresses:

None

Timed Addresses:

'104, '105, '106, '107, '120, '121, '122, and '123 Repeat Every
16 Waveguide cycles.

'220, and '221 Repeat Every 24 Waveguide Cycles.

PROM ADDRESSES

Data Set #1

(OCTAL)

| | | | | | | | | | | | | | | | |
|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 000 | 30 | 032 | 60 | 000 | 110 | 162 | 140 | 000 | 170 | 112 | 220 | 000 | 250 | 042 |
| 1 | 002 | 31 | 034 | 61 | 002 | 111 | 170 | 141 | 002 | 171 | 114 | 221 | 002 | 251 | 060 |
| 2 | 004 | 32 | 040 | 62 | 004 | 112 | 172 | 142 | 004 | 172 | 120 | 222 | 004 | 252 | 062 |
| 3 | 006 | 33 | 042 | 63 | 006 | 113 | 174 | 143 | 006 | 173 | 122 | 223 | 006 | 253 | 064 |
| 4 | 020 | 34 | 060 | 64 | 020 | 114 | 010 | 144 | 020 | 174 | 130 | 224 | 020 | 254 | 100 |
| 5 | 022 | 35 | 062 | 65 | 022 | 115 | 012 | 145 | 022 | 175 | 132 | 225 | 022 | 255 | 104 |
| 6 | 024 | 36 | 064 | 66 | 024 | 116 | 014 | 146 | 024 | 176 | 134 | 226 | 024 | 256 | 106 |
| 7 | 026 | 37 | 100 | 67 | 026 | 117 | 030 | 147 | 026 | 177 | 140 | 227 | 026 | 257 | 110 |
| 10 | 220 | 40 | 000 | 70 | 132 | 120 | 000 | 150 | 220 | 200 | 000 | 230 | 174 | 260 | 000 |
| 11 | 221 | 41 | 002 | 71 | 134 | 121 | 002 | 151 | 221 | 201 | 002 | 231 | 010 | 261 | 002 |
| 12 | 222 | 42 | 004 | 72 | 140 | 122 | 004 | 152 | 222 | 202 | 004 | 232 | 012 | 262 | 004 |
| 13 | 223 | 43 | 006 | 73 | 142 | 123 | 006 | 153 | 223 | 203 | 006 | 233 | 014 | 263 | 006 |
| 14 | 010 | 44 | 020 | 74 | 150 | 124 | 020 | 154 | 100 | 204 | 020 | 234 | 030 | 264 | 020 |
| 15 | 012 | 45 | 022 | 75 | 152 | 125 | 022 | 155 | 104 | 205 | 022 | 235 | 032 | 265 | 022 |
| 16 | 014 | 46 | 024 | 76 | 154 | 126 | 024 | 156 | 106 | 206 | 024 | 236 | 034 | 266 | 024 |
| 17 | 030 | 47 | 026 | 77 | 160 | 127 | 026 | 157 | 110 | 207 | 026 | 237 | 040 | 267 | 026 |
| 20 | 000 | 50 | 104 | 100 | 000 | 130 | 032 | 160 | 000 | 210 | 142 | 240 | 000 | 270 | 122 |
| 21 | 002 | 51 | 106 | 101 | 002 | 131 | 034 | 161 | 002 | 211 | 150 | 241 | 002 | 271 | 114 |
| 22 | 004 | 52 | 110 | 102 | 004 | 132 | 040 | 162 | 004 | 212 | 152 | 242 | 004 | 272 | 120 |
| 23 | 006 | 53 | 112 | 103 | 006 | 133 | 042 | 163 | 006 | 213 | 154 | 243 | 006 | 273 | 122 |
| 24 | 020 | 54 | 114 | 104 | 020 | 134 | 060 | 164 | 020 | 214 | 160 | 244 | 020 | 274 | 130 |
| 25 | 022 | 55 | 120 | 105 | 022 | 135 | 062 | 165 | 022 | 215 | 162 | 245 | 022 | 275 | 132 |
| 26 | 024 | 56 | 122 | 106 | 024 | 136 | 064 | 166 | 024 | 216 | 170 | 246 | 024 | 276 | 134 |
| 27 | 026 | 57 | 130 | 107 | 026 | 137 | 200 | 167 | 026 | 217 | 172 | 247 | 026 | 277 | 200 |

PROM ADDRESSES

Data Set #2

(OCTAL)

| | | | | | | | | | | | | | | | |
|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 241 | 30 | 241 | 60 | 241 | 110 | 241 | 140 | 241 | 170 | 241 | 220 | 241 | 250 | 241 |
| 1 | 245 | 31 | 245 | 61 | 245 | 111 | 245 | 141 | 245 | 171 | 245 | 221 | 245 | 251 | 245 |
| 2 | 276 | 32 | 276 | 62 | 276 | 112 | 276 | 142 | 276 | 172 | 276 | 222 | 276 | 252 | 276 |
| 3 | 000 | 33 | 102 | 63 | 014 | 113 | 146 | 143 | 040 | 173 | 252 | 223 | 054 | 253 | 006 |
| 4 | 002 | 34 | 104 | 64 | 016 | 114 | 200 | 144 | 042 | 174 | 254 | 224 | 056 | 254 | 010 |
| 5 | 004 | 35 | 106 | 65 | 020 | 115 | 202 | 145 | 044 | 175 | 256 | 225 | 100 | 255 | 012 |
| 6 | 006 | 36 | 140 | 66 | 022 | 116 | 240 | 146 | 046 | 176 | 000 | 226 | 102 | 256 | 014 |
| 7 | 010 | 37 | 142 | 67 | 024 | 117 | 244 | 147 | 050 | 177 | 002 | 227 | 104 | 257 | 016 |
| 10 | 012 | 40 | 144 | 70 | 026 | 120 | 250 | 150 | 052 | 200 | 004 | 230 | 106 | 260 | 020 |
| 11 | 014 | 41 | 146 | 71 | 040 | 121 | 252 | 151 | 054 | 201 | 006 | 231 | 140 | 261 | 022 |
| 12 | 016 | 42 | 200 | 72 | 042 | 122 | 254 | 152 | 056 | 202 | 010 | 232 | 142 | 262 | 024 |
| 13 | 020 | 43 | 202 | 73 | 044 | 123 | 256 | 153 | 100 | 203 | 012 | 233 | 144 | 263 | 026 |
| 14 | 022 | 44 | 240 | 74 | 046 | 124 | 000 | 154 | 102 | 204 | 014 | 234 | 146 | 264 | 040 |
| 15 | 024 | 45 | 244 | 75 | 050 | 125 | 002 | 155 | 104 | 205 | 016 | 235 | 200 | 265 | 042 |
| 16 | 026 | 46 | 250 | 76 | 052 | 126 | 004 | 156 | 106 | 206 | 020 | 236 | 202 | 266 | 044 |
| 17 | 040 | 47 | 252 | 77 | 054 | 127 | 006 | 157 | 140 | 207 | 022 | 237 | 240 | 267 | 046 |
| 20 | 042 | 50 | 254 | 100 | 056 | 130 | 010 | 160 | 142 | 210 | 024 | 240 | 244 | 270 | 050 |
| 21 | 044 | 51 | 256 | 101 | 100 | 131 | 012 | 161 | 144 | 211 | 026 | 241 | 250 | 271 | 052 |
| 22 | 046 | 52 | 000 | 102 | 102 | 132 | 014 | 162 | 146 | 212 | 040 | 242 | 252 | 272 | 054 |
| 23 | 050 | 53 | 002 | 103 | 104 | 133 | 016 | 163 | 200 | 213 | 042 | 243 | 254 | 273 | 056 |
| 24 | 052 | 54 | 004 | 104 | 106 | 134 | 020 | 164 | 202 | 214 | 044 | 244 | 256 | 274 | 100 |
| 25 | 054 | 55 | 006 | 105 | 140 | 135 | 022 | 165 | 240 | 215 | 046 | 245 | 000 | 275 | 102 |
| 26 | 056 | 56 | 010 | 106 | 142 | 136 | 024 | 166 | 244 | 216 | 050 | 246 | 002 | 276 | 104 |
| 27 | 100 | 57 | 012 | 107 | 144 | 137 | 026 | 167 | 250 | 217 | 052 | 247 | 004 | 277 | 106 |

PROM ADDRESSES

Data Set #3

(OCTAL)

| | | | | | | | | | | | | | | | |
|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 220 | 30 | 231 | 60 | 222 | 110 | 233 | 140 | 224 | 170 | 235 | 220 | 226 | 250 | 237 |
| 1 | 230 | 31 | 020 | 61 | 232 | 111 | 002 | 141 | 234 | 171 | 020 | 221 | 236 | 251 | 002 |
| 2 | 221 | 32 | 222 | 62 | 223 | 112 | 224 | 142 | 225 | 172 | 226 | 222 | 227 | 252 | 220 |
| 3 | 231 | 33 | 232 | 63 | 233 | 113 | 234 | 143 | 235 | 173 | 236 | 223 | 237 | 253 | 230 |
| 4 | 000 | 34 | 223 | 64 | 006 | 114 | 225 | 144 | 000 | 174 | 227 | 224 | 006 | 254 | 221 |
| 5 | 222 | 35 | 233 | 65 | 224 | 115 | 235 | 145 | 226 | 175 | 237 | 225 | 220 | 255 | 231 |
| 6 | 232 | 36 | 040 | 66 | 234 | 116 | 004 | 146 | 236 | 176 | 040 | 226 | 230 | 256 | 004 |
| 7 | 223 | 37 | 200 | 67 | 223 | 117 | 200 | 147 | 227 | 177 | 200 | 227 | 221 | 257 | 200 |
| 10 | 233 | 40 | 224 | 70 | 235 | 120 | 226 | 150 | 237 | 200 | 220 | 230 | 231 | 260 | 222 |
| 11 | 002 | 41 | 234 | 71 | 020 | 121 | 236 | 151 | 002 | 201 | 230 | 231 | 020 | 261 | 232 |
| 12 | 224 | 42 | 225 | 72 | 226 | 122 | 227 | 152 | 220 | 202 | 221 | 232 | 222 | 262 | 223 |
| 13 | 234 | 43 | 235 | 73 | 236 | 123 | 237 | 153 | 230 | 203 | 231 | 233 | 232 | 263 | 233 |
| 14 | 225 | 44 | 000 | 74 | 227 | 124 | 006 | 154 | 221 | 204 | 000 | 234 | 223 | 264 | 006 |
| 15 | 235 | 45 | 226 | 75 | 237 | 125 | 220 | 155 | 231 | 205 | 222 | 235 | 233 | 265 | 224 |
| 16 | 004 | 46 | 236 | 76 | 040 | 126 | 230 | 156 | 004 | 206 | 232 | 236 | 040 | 266 | 234 |
| 17 | 200 | 47 | 227 | 77 | 200 | 127 | 221 | 157 | 200 | 207 | 223 | 237 | 200 | 267 | 225 |
| 20 | 226 | 50 | 237 | 100 | 220 | 130 | 231 | 160 | 222 | 210 | 233 | 240 | 224 | 270 | 235 |
| 21 | 236 | 51 | 002 | 101 | 230 | 131 | 020 | 161 | 232 | 211 | 002 | 241 | 234 | 271 | 020 |
| 22 | 227 | 52 | 220 | 102 | 221 | 132 | 222 | 162 | 223 | 212 | 224 | 242 | 225 | 272 | 226 |
| 23 | 237 | 53 | 230 | 103 | 231 | 133 | 232 | 163 | 233 | 213 | 234 | 243 | 235 | 273 | 236 |
| 24 | 006 | 54 | 221 | 104 | 000 | 134 | 223 | 164 | 006 | 214 | 225 | 244 | 000 | 274 | 227 |
| 25 | 220 | 55 | 231 | 105 | 222 | 135 | 233 | 165 | 224 | 215 | 235 | 245 | 226 | 275 | 237 |
| 26 | 230 | 56 | 004 | 106 | 232 | 136 | 040 | 166 | 234 | 216 | 004 | 246 | 236 | 276 | 040 |
| 27 | 221 | 57 | 200 | 107 | 223 | 137 | 200 | 167 | 225 | 217 | 200 | 247 | 227 | 277 | 200 |

PROM ADDRESSES

Data Set #4

(OCTAL)

| | | | | | | | | | | | | | | | |
|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 040 | 30 | 124 | 60 | 044 | 110 | 130 | 140 | 050 | 170 | 134 | 220 | 060 | 250 | 140 |
| 1 | 042 | 31 | 126 | 61 | 046 | 111 | 132 | 141 | 052 | 171 | 136 | 221 | 062 | 251 | 142 |
| 2 | 044 | 32 | 130 | 62 | 050 | 112 | 134 | 142 | 060 | 172 | 140 | 222 | 064 | 252 | 144 |
| 3 | 046 | 33 | 132 | 63 | 052 | 113 | 136 | 143 | 062 | 173 | 142 | 223 | 066 | 253 | 146 |
| 4 | 050 | 34 | 134 | 64 | 060 | 114 | 140 | 144 | 064 | 174 | 144 | 224 | 070 | 254 | 150 |
| 5 | 052 | 35 | 136 | 65 | 062 | 115 | 142 | 145 | 066 | 175 | 146 | 225 | 072 | 255 | 152 |
| 6 | 060 | 36 | 140 | 66 | 064 | 116 | 144 | 146 | 070 | 176 | 150 | 226 | 074 | 256 | 154 |
| 7 | 062 | 37 | 142 | 67 | 066 | 117 | 146 | 147 | 072 | 177 | 152 | 227 | 076 | 257 | 156 |
| 10 | 064 | 40 | 144 | 70 | 070 | 120 | 150 | 150 | 074 | 200 | 154 | 230 | 100 | 260 | 200 |
| 11 | 066 | 41 | 146 | 71 | 072 | 121 | 152 | 151 | 076 | 201 | 156 | 231 | 102 | 261 | 220 |
| 12 | 070 | 42 | 150 | 72 | 074 | 122 | 154 | 152 | 100 | 202 | 200 | 232 | 104 | 262 | 221 |
| 13 | 072 | 43 | 152 | 73 | 076 | 123 | 156 | 153 | 102 | 203 | 220 | 233 | 106 | 263 | 222 |
| 14 | 074 | 44 | 154 | 74 | 100 | 124 | 200 | 154 | 104 | 204 | 221 | 234 | 110 | 264 | 223 |
| 15 | 076 | 45 | 156 | 75 | 102 | 125 | 220 | 155 | 106 | 205 | 222 | 235 | 112 | 265 | 224 |
| 16 | 100 | 46 | 200 | 76 | 104 | 126 | 221 | 156 | 110 | 206 | 223 | 236 | 114 | 266 | 225 |
| 17 | 102 | 47 | 220 | 77 | 106 | 127 | 222 | 157 | 112 | 207 | 224 | 237 | 116 | 267 | 226 |
| 20 | 104 | 50 | 221 | 100 | 110 | 130 | 223 | 160 | 114 | 210 | 225 | 240 | 120 | 270 | 040 |
| 21 | 106 | 51 | 222 | 101 | 112 | 131 | 224 | 161 | 116 | 211 | 226 | 241 | 122 | 271 | 042 |
| 22 | 110 | 52 | 223 | 102 | 114 | 132 | 225 | 162 | 120 | 212 | 040 | 242 | 124 | 272 | 044 |
| 23 | 112 | 53 | 224 | 103 | 116 | 133 | 226 | 163 | 122 | 213 | 042 | 243 | 126 | 273 | 046 |
| 24 | 114 | 54 | 225 | 104 | 120 | 134 | 040 | 164 | 124 | 214 | 044 | 244 | 130 | 274 | 050 |
| 25 | 116 | 55 | 226 | 105 | 122 | 135 | 042 | 165 | 126 | 215 | 046 | 245 | 132 | 275 | 052 |
| 26 | 120 | 56 | 040 | 106 | 124 | 136 | 044 | 166 | 130 | 216 | 050 | 246 | 134 | 276 | 060 |
| 27 | 122 | 57 | 042 | 107 | 126 | 137 | 046 | 167 | 132 | 217 | 052 | 247 | 136 | 277 | 062 |

PROM ADDRESSES

Data Set #5

(OCTAL)

| | | | | | | | | | | | | | | | |
|----|-----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 104 | 30 | 056 | 60 | 104 | 110 | 000 | 140 | 104 | 170 | 044 | 220 | 104 | 250 | 112 |
| 1 | 106 | 31 | 100 | 61 | 106 | 111 | 002 | 141 | 106 | 171 | 046 | 221 | 106 | 251 | 114 |
| 2 | 120 | 32 | 102 | 62 | 120 | 112 | 004 | 142 | 120 | 172 | 050 | 222 | 120 | 252 | 200 |
| 3 | 122 | 33 | 110 | 63 | 122 | 113 | 006 | 143 | 122 | 173 | 052 | 223 | 122 | 253 | 240 |
| 4 | 220 | 34 | 220 | 64 | 220 | 114 | 220 | 144 | 220 | 174 | 220 | 224 | 220 | 254 | 220 |
| 5 | 221 | 35 | 221 | 65 | 221 | 115 | 221 | 145 | 221 | 175 | 221 | 225 | 221 | 255 | 221 |
| 6 | 000 | 36 | 112 | 66 | 044 | 116 | 012 | 146 | 112 | 176 | 054 | 226 | 012 | 256 | 241 |
| 7 | 002 | 37 | 114 | 67 | 046 | 117 | 014 | 147 | 114 | 177 | 056 | 227 | 014 | 257 | 000 |
| 10 | 004 | 40 | 104 | 70 | 050 | 120 | 104 | 150 | 200 | 200 | 104 | 230 | 016 | 260 | 104 |
| 11 | 006 | 41 | 106 | 71 | 052 | 121 | 106 | 151 | 240 | 201 | 106 | 231 | 040 | 261 | 106 |
| 12 | 012 | 42 | 110 | 72 | 054 | 122 | 120 | 152 | 241 | 202 | 120 | 232 | 042 | 262 | 120 |
| 13 | 014 | 43 | 112 | 73 | 056 | 123 | 122 | 153 | 000 | 203 | 122 | 233 | 044 | 263 | 122 |
| 14 | 016 | 44 | 200 | 74 | 100 | 124 | 016 | 154 | 002 | 204 | 100 | 234 | 046 | 264 | 002 |
| 15 | 040 | 45 | 240 | 75 | 102 | 125 | 040 | 155 | 004 | 205 | 102 | 235 | 050 | 265 | 004 |
| 16 | 042 | 46 | 241 | 76 | 110 | 126 | 042 | 156 | 006 | 206 | 110 | 236 | 052 | 266 | 006 |
| 17 | 044 | 47 | 000 | 77 | 112 | 127 | 044 | 157 | 012 | 207 | 112 | 237 | 054 | 267 | 012 |
| 20 | 104 | 50 | 002 | 100 | 104 | 130 | 146 | 160 | 104 | 210 | 114 | 240 | 104 | 270 | 014 |
| 21 | 106 | 51 | 004 | 101 | 106 | 131 | 050 | 161 | 106 | 211 | 200 | 241 | 106 | 271 | 016 |
| 22 | 120 | 52 | 006 | 102 | 120 | 132 | 052 | 162 | 120 | 212 | 240 | 242 | 120 | 272 | 040 |
| 23 | 122 | 53 | 012 | 103 | 122 | 133 | 054 | 163 | 122 | 213 | 241 | 243 | 122 | 273 | 042 |
| 24 | 046 | 54 | 014 | 104 | 114 | 134 | 056 | 164 | 014 | 214 | 000 | 244 | 056 | 274 | 044 |
| 25 | 050 | 55 | 016 | 105 | 200 | 135 | 100 | 165 | 016 | 215 | 002 | 245 | 100 | 275 | 046 |
| 26 | 052 | 56 | 040 | 106 | 240 | 136 | 102 | 166 | 040 | 216 | 004 | 246 | 102 | 276 | 050 |
| 27 | 054 | 57 | 042 | 107 | 241 | 137 | 110 | 167 | 042 | 217 | 006 | 247 | 110 | 277 | 052 |