



| Equipment List  |                |                     |                  |             |
|-----------------|----------------|---------------------|------------------|-------------|
| Displayed Text  | Description    | Manufacturer        | Material         | Model       |
| Charcoal Filter |                |                     |                  |             |
| D 1302          | D 1302         |                     | Stainless Steel  |             |
| D 1402          | D 1402         |                     | Stainless Steel  |             |
| P1              | Diaphragm Pump | Air Dimensions Inc. | SS, PTFE & Viton | B162-FP-HHO |
| P2              | Diaphragm Pump | Air Dimensions      | SS, PTFE & Viton | B162-FP-HHO |

| Instrument List |                                  |                 |                 |                            |                            |
|-----------------|----------------------------------|-----------------|-----------------|----------------------------|----------------------------|
| Displayed Text  | Description                      | Connection Size | Service         | Manufacturer               | Model                      |
| FM1             | Thermal Mass Flow Meter          | 1/4"            |                 | Sierra Instruments         | 824S-2-OV1-PV2-V1          |
| FM2             | Thermal Mass Flow Meter          | 1/4"            |                 | Sierra Instruments         | 824S-2-OV1-PV2-V1          |
| FM3             | Thermal Mass Flow Meter          | 1/4"            |                 | Sierra Instruments         | 824S-2-OV1-PV2-V1          |
| FM4             | Thermal Mass Flow Meter          | 1/4"            |                 | Sierra Instruments         | 824S-2-OV1-PV2-V1          |
| FM5             | Thermal Mass Flow Meter          | 1/4"            |                 | Sierra Instruments         | 824S-2-OV1-PV2-V1          |
| G1              | Pressure Transducer              | 1/4" FPT        | Explosion Proof | Wika                       | E-10 (-30 inHg to 100 PSI) |
| G2              | Pressure Transducer              | 1/4" FPT        | Explosion Proof | Wika                       | E-10 (-30 inHg to 30 PSI)  |
| G3              | Pressure Transducer              | 1/4" FPT        | Explosion Proof | Wika                       | E-10 (-30 inHg to 30 PSI)  |
| G4              | Pressure Transducer              | 1/4" FPT        | Explosion Proof | Wika                       | E-10, (0 to 5 PSI)         |
| G5              | Pressure Transducer              | 1/4" FPT        | Explosion Proof | Wika                       | E-10 (-30 inHg to 30 PSI)  |
| G6              | Pressure Transducer              | 1/4" FPT        | Explosion Proof | Wika                       | E-10 (-30 inHg to 30 PSI)  |
| LM              | Liquid Level Monitor and Sweeper | 1/4"            |                 | Virginia Tech              |                            |
| OM              | Oxygen Monitor                   | 1/4"            |                 | Advanced Micro Instruments | 65 Percent                 |
| SG              | Strain Gauge                     |                 |                 | Omega                      | LC601-5                    |

| Valve List     |                    |           |                             |                |                    |
|----------------|--------------------|-----------|-----------------------------|----------------|--------------------|
| Displayed Text | Description        | Line Size | Valve Class                 | Manufacturer   | Model              |
| BV1            | Ball Valve         | 1/2"      |                             | Swagelok       | SS-45S8            |
| CV1            | Check Valve        | 3/8" FPT  | 0.21 bar Crack Pressure     | Generant       | CV-375-S-V-3       |
| CV2            | Check Valve        | 1/2"      | 5 mbar Crack Pressure       | Virginia Tech  | Matt Joyce Special |
| CV2b           | Check Valve        | 1/2"      | 5 mbar Crack Pressure       | Virginia Tech  | Matt Joyce Special |
| CV3            | Check Valve        | 1/2"      | 5 mbar Crack Pressure       | Virginia Tech  | Matt Joyce Special |
| CV4            | Check Valve        | 1/2" FPT  | 0.21 bar Crack Pressure     | Generant       | CV-500-S-V-3       |
| CV5            | Check Valve        | 1/2"      | 1 mbar Crack Pressure       | Virginia Tech  | Matt Joyce Special |
| MV1            | Metering Valve     | 1/4"      |                             | Swagelok       | SS-4MG-MH          |
| NV1            | Needle Valve       | 1/4"      | Severe Service              | Swagelok       | SS-3NB54           |
| NV2            | Needle Valve       | 1/4"      | Severe Service              | Swagelok       | SS-3NB54           |
| NV3            | Needle Valve       | 1/4"      | Severe Service              | Swagelok       | SS-3NB54           |
| NV4            | Needle Valve       | 1/4"      | Severe Service              | Swagelok       | SS-3NB54           |
| NV5            | Needle Valve       | 1/4"      | Severe Service              | Swagelok       | SS-3NB54           |
| R1             | Pressure Regulator | 1/4"      | Diaphragm Sensing Regulator | Swagelok       | KLF1CRA4150E6000   |
| R2             | Pressure Regulator | 1/4"      | Diaphragm Sensing Regulator | Swagelok       | KLF1CRA4150E6000   |
| R3             | Pressure Regulator | 1/4"      | Diaphragm Sensing Regulator | Swagelok       | KLF1CRA4150E6000   |
| V1             | Solenoid Valve     | 1/4"      |                             | Asco           | 8262G2201          |
| V1320          | Gate Valve         |           |                             | VAT            | 15.2               |
| V1321          | Diaphragm Valve    | 2"        |                             | Carten Control | HB2000             |
| V1377          | LAKN Supply valve  | 1/4"      |                             | Carten Control | HB2000             |
| V1421          | Diaphragm Valve    | 2"        |                             | Carten Control | HB2000             |
| V2             | Solenoid Valve     | 1/4"      | 24 VDC Supply               | Asco           | 8262G2201          |
| V3             | Solenoid Valve     | 1/4"      | 24 VDC Supply               | Asco           | 8262G2201          |
| V4             | Solenoid Valve     | 1/4"      | 24 VDC Supply               | Asco           | 8262G2201          |
| V5             | Solenoid Valve     | 1/4"      | 24 VDC Supply               | Asco           | 8262G2201          |
| V6             | Solenoid Valve     | 1/4"      | 24 VDC Supply               | Asco           | 8262G2201          |
| V7             | Solenoid Valve     | 1/4"      | 24 VDC Supply               | Asco           | 8262G2201          |
| V8             | Solenoid Valve     | 1/2"      | 24 VDC Supply               | Asco           | 8210687V           |

| TITLE                   |         | REVISIONS |                  |
|-------------------------|---------|-----------|------------------|
| Insertion System P & ID |         | NO.       | DATE DESCRIPTION |
| DATE ORIGINAL           | SCALE   |           |                  |
| 03-25-07                |         |           |                  |
| LATEST REVISION         | JOB NO. | CHECKED   | DRAWN            |
|                         |         |           | Steve Hardy      |