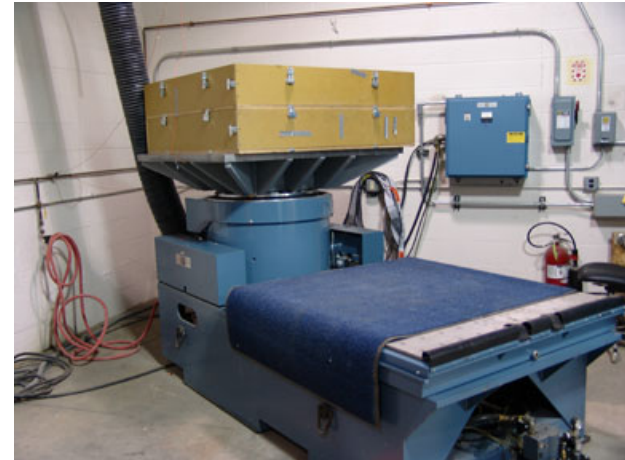


Vibration Test Units- Bldg 21 (2)

Environmental Conditioning Vibration Test (2 units)

- Capable of subjecting all types of personal protective equipment or components to a wide range of shock and vibration conditions. This equipment can simulate conditions of many different modes of transport such as aircraft, helicopter, tracked, tire or rail vehicles.
- The Vibration units specifications are 8,000 lbs Force in Sine and Random Modes, 220 “g” shock, 2 inch (51 mm) displacement, 1500 lbs Automatic Internal Pneumatic Load Support, computer controlled remote on-screen command/status panel to start-up and monitor the amplifier/shaker system operation and acquire & store data and three sets of containment fixtures for the CBRN certification testing

Strategic Goals: Inhalation



Notes:

Climatic Chamber - Bldg 21 (3)

Environmental Temperature and Humidity Test (2 units / 1 laboratory)

- Capable of subjecting all types of personal protective equipment the chamber with an inside volume of 512 cubic feet has a temperature range of -68°C (-90 °F) to 121°C (250 °F), humidity range of 20% RH to 95% RH and meets MIL-STD-810E Test Standards.
- Ancillary equipment includes: Ocenco Incorporated – Automated Breathing Metabolic Simulator (ABMS) which can be coupled to the chambers to conduct climatic studies on various types of Closed Circuit Breathing Devices and a programmable computer control, data monitoring and acquisition system.

Strategic Goals: Inhalation



Notes:

Human Factor Chamber - Bldg 21 (4)

Dermal Research Human Subject Test (HEROES)

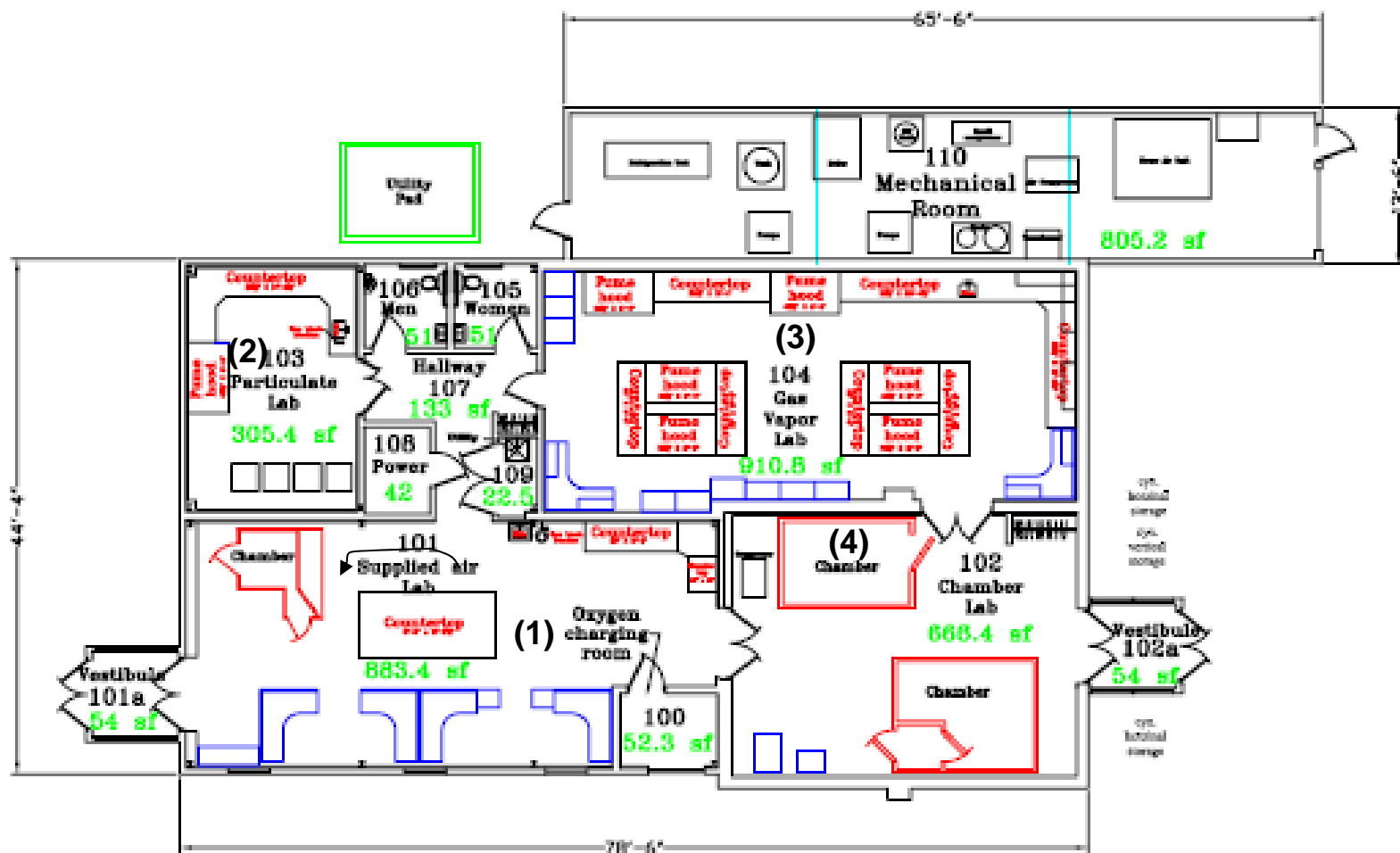
- Capable of human physiological or machine testing for all types of personal protective equipment the chamber with an inside volume of 1080 cubic feet has a temperature range of -62oC (-80 oF) to 60oC (140oF) and humidity range of 20% RH to 95% RH conditions.
- Ancillary equipment includes: an air lock, 2 subject observation windows, Woodway Treadmill and a programmable computer control, data monitoring and acquisition.

Strategic Goals: Inhalation



Notes:

Bldg 37 Floor Plan - Map Key B



Building #37
Plan View
4,514.4 GSP



Certification Laboratory - Bldg 37 (1)

Air-Supplied Testing (Air Tests)

- Capable of subjecting all types of air-supplied respirators (supplied air and SCBA) to approximately 45 different tests to evaluate whether they meet the minimum requirements of 42 CFR 84 Subpart H and Subpart J prior to testing these devices on a human.
- The SCBA positive pressure test (RCT-ASR-STP-120) is done by donning the SCBA on an anthropometric head with a pressure tap. The headform is then connected to a breathing machine with a 622 kg.-m/min cam operating at 24 rpm with a 40 lpm volume (115 lpm peak flow). During the duration of this test, the pressure in the facepiece of the SCBA must remain positive during both the inhalation and exhalation cycles.

Strategic Goals: Inhalation



Notes:

Certification Laboratory - Bldg 37 (2)

Particulate Testing

- Capable of subjecting all types of air-purifying respirator filters to 10 different tests to evaluate whether they meet the minimum particulate efficiency requirements of 42 CFR 84 Subpart K and Subpart KK.
- The N95 particulate efficiency test (RCT-APR-STP-0059) is done by mounting the filtering facepiece respirator onto a flat plate and placing it into an enclosure which is then inserted into the chucks of the 8130 Automated Filter Tester. The filter is challenged by a sodium chloride aerosol with a particle size distribution with a count median diameter of 0.075 ± 0.020 micrometer and a standard geometric deviation not exceeding 1.86. The flow rate that the respirator is exposed to is 85 lpm.

Strategic Goals: Inhalation



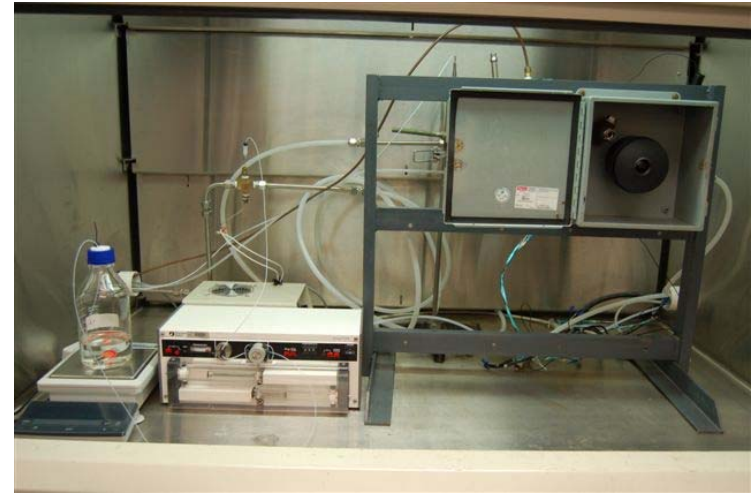
Notes:

Certification Laboratory - Bldg 37 (3)

Gas & Vapor Testing

- Capable of subjecting all types of air-purifying respirator cartridges and canisters to more than 42 different tests to evaluate whether they meet the minimum service life requirements stated in 42 CFR 84 Subpart L, the CBRN APR Statement of Standard, CBRN APER Statement of Standard, CBRN PAPR Statement of Standard.
- The CBRN OV service life test (RCT-APRS-STP-CBRN-0301) is done by mounting the CBRN canister in the test fixture and exposing the canister to 2600 ppm of Cyclohexane in a controlled humidity environment. The test is continued for the minimum service life being requested or until a breakthrough of 10 ppm is detected (whichever happens first).

Strategic Goals: Inhalation



Notes:

Certification Laboratory - Bldg 37 (4)

Air-Supplied Testing (Cold Temperature Tests)

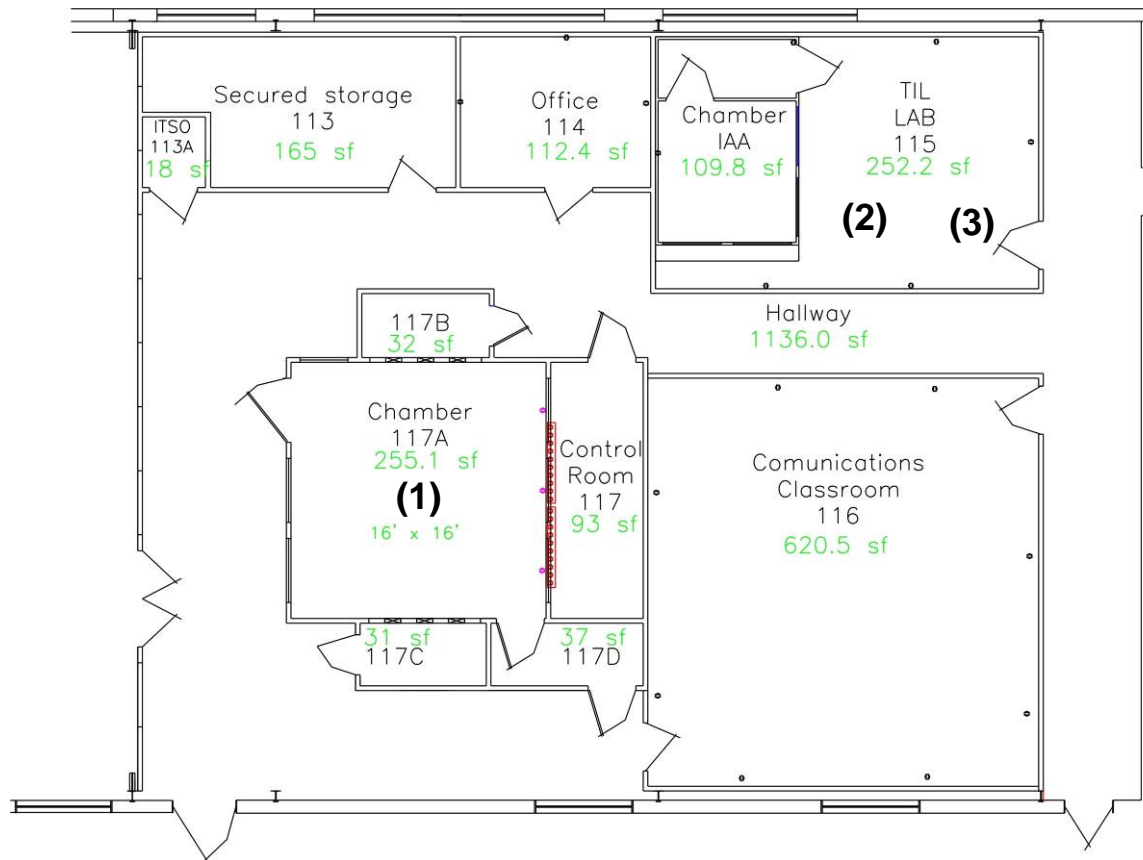
- As per 42 CFR 84 Subpart H, SCBA manufacturers specify the minimum temperature for safe operation of their equipment. The equipment is evaluated at the minimum temperature to ensure that the unit functions satisfactorily.
- The SCBA cold temperature test (RCT-ASR-STP-118) is done by cold soaking the SCBA for 4 hours at the minimum temperature specified by the manufacturer. A test subject then enters the environmental chamber and dons the unit while at the specified temperature extreme. While the test subject has the unit donned, he/she will alternate between one minute periods of rest and exercise. During this test the unit shall function as specified, the wearer shall not have obscured vision to perform the exercise and the wearer shall not experience undue discomfort due to airflow restriction or other physical changes in the SCBA operation.

Strategic Goals: Inhalation



Notes:

Bldg 40 Floor Plan - Map Key C



2974. sf NPPTL Lab Area
350.2 sf Mens Room
3324.2. sf NPPTL Total Area

Building #40
ROOM LAYOUT

9109.9 sf Total Building

Fit Test Laboratory - Bldg 40 (1)

Laboratory Respiratory Protection Level (LRPL) Test

- The purpose of this test is to verify that facepieces are designed and constructed to fit persons with various facial shapes and sizes. This is measured during the Laboratory Respirator Protection Level test. The Los Alamos National Laboratory (LANL) determined that this testing should be performed using a panel of test subjects of various facial sizes. Performing the LRPL with the LANL panel of test subjects is done to insure that a respirator, fitted according to the manufacturer's User's Instructions and passing the manufacturer's prescribed user seal check, will protect as expected and maintain a proper fit.
- Testing is performed by measuring the concentration of generated "corn oil" particles inside and outside the respirator while worn by human test subjects. Subjects are instructed to perform a series of eleven physical exercises. From this data a fit factor can be calculated to determine if the pass/fail criteria has been met.

Strategic Goals: Inhalation



Notes:

Fit Test Laboratory - Bldg 40 (2)

Total Inward Leakage (TIL) Test

- The purpose of this test is to verify that facepieces are designed and constructed to fit persons with various facial shapes and sizes. For ½-facepiece respirators, this is planned to be measured using a TSI, Inc. PortaCount Plus instrument and ambient aerosol (naturally-occurring particles in the ambient atmosphere).
- The Los Alamos National Laboratory (LANL) determined that this type of testing should be performed using a panel of test subjects of various facial sizes. The updated panels based on the 2003 NIOSH anthropometrics study of US respirator wearers are proposed to replace the LANL panel of test subjects to reflect the current respirator-wearing US workforce.
- Testing is performed by measuring the concentration of ambient particles inside and outside the respirator while worn by human test subjects. Subjects are instructed to perform a series of eight physical exercises. The TIL will be determined by measuring ratio of the average challenge concentration inside the facepiece (C_{in}) to the challenge concentration outside the facepiece (C_{out}), and expressing that ratio as a percentage. That is, $TIL = [C_{in}/C_{out}] 100\%$.

Strategic Goals: Inhalation



Notes:

Fit Test Laboratory - Bldg 40 (3)

Communication Performance Test Display

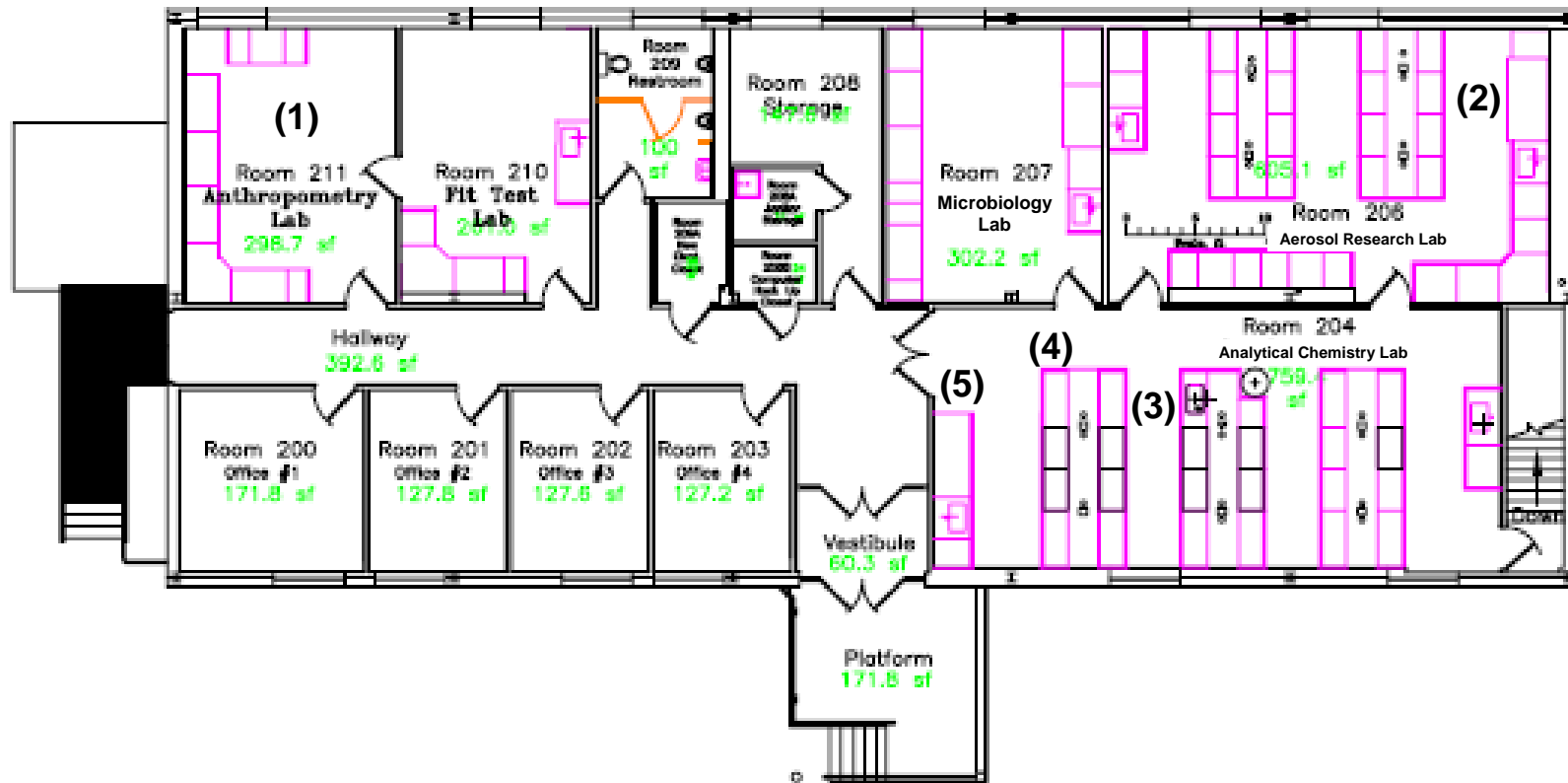
- The purpose of the test is to quantify the performance of a CBRN APR to transmit intelligible speech of a human test subject. This is accomplished by a listener's ability to comprehend single words and provide an indication of speech transmission of the selected words.
- The Communication Test is performed using the Modified Rhyme Test. The speaker reads a list of single words while the listeners choose the word spoken. Both listeners and speakers are in a combination of masked and unmasked posture during the MRT to provide an indication of the respirator's ability to transmit intelligible speech. An APR must obtain an average score of 70% or higher to pass this communication test.

Strategic Goals: Inhalation



Notes:

Bldg 13 Floor Plan - Map Key D



Building #13
2nd FLOOR
Rev-04/04/05
4,359.4 GSF

Anthropometric Research Laboratory - Bldg 13 (1)

Anthropometrics

- The Anthropometric Research Laboratory is a specially prepared room free of direct sunlight. This is necessary because it houses a Cyberware® Model 3030 Head and Face Color 3D head scanner used to digitize the profile and capture the shape of a human subject's head and face in a few seconds. The scanning process captures an array of digitized points, with each point represented by x, y, z coordinates for shape and 24-bit RGB coordinates for color. This data is then immediately transferred to a graphics workstation for immediate viewing and modification. This technology offers PPT Program researchers the ability to explore potential improvements in respiratory protection by using scan data to improve the representativeness of respirator fit test panels and improve facepiece design. This laboratory is also used to conduct PortaCount® and other respirator fit testing experiments.
- Facilities include: 4 Model 8028 PortaCount® Plus Universal Fit Test Systems and 1 Occupational Health Dynamics Model 3000 Respirator Fit Test System.

Strategic Goals: Inhalation



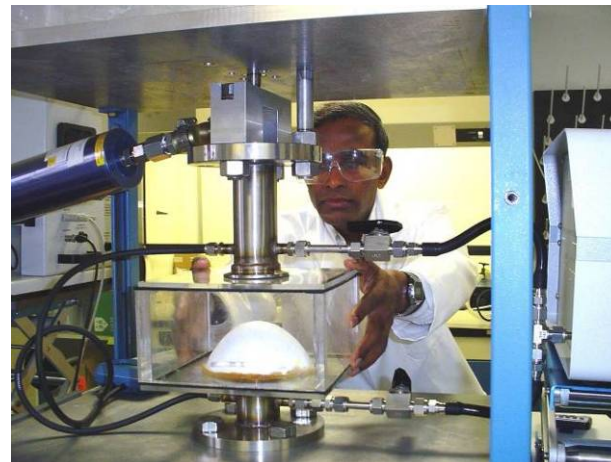
Notes:

Aerosol Research Laboratory - Bldg 13 (2)

Nanotechnology Research

- The Aerosol Research Laboratory contains equipment for the generation and detection of various types of small-diameter (typically below 400nm) mono- and polydisperse and nanoparticle aerosols for use in penetration testing of protective equipment, e.g. filter facepiece respirators (both flat sealed and mounted on headforms), protective ensemble components and clothing, and flat media.
- Facilities include a TSI 3160 Fractional Efficiency Filter Tester, TSI Model 8130 Automated Filter Tester, 3 TSI 3080 Scanning Mobility Particle Sizers, 2 Model 3321 TSI Aerodynamic Particle Sizers Spectrometer, 3 Model 3025 A Condensation Particle Counters (CPC), Model 3775 CPC, and TSI Model 3025A-S Ultrafine CPC, and TSI Model 3480 Electro spray Aerosol Generator and TSI Model 3085 NANO DMA. In addition, several types of atomizers and a variety of other particle generation devices are available.

Strategic Goals: Inhalation



Notes:

Analytical Chemistry Laboratory - Bldg 13 (3)

Analytical Chemistry

- The Analytical Chemistry Laboratory is a recently renovated state-of-the-art chemistry laboratory designed to accommodate a gamut of analytical equipment used to investigate the performance, quality, reliability and efficacy of respirators and personal protective equipment and clothing. The array of test equipment provides the PPT Program with the capabilities to analyze liquid, gas and other types of samples in support of various PPT Program projects.
- Facilities include a six-foot fume hood, 2 ceiling mounted ventilation extractor arms and three islands of bench top counter space used to accommodate a variety of analytical equipment including: 2 MIRAN 1A gas analyzers, MIRAN Sapphire XL IR gas analyzer, Waters 2690 Liquid Chromatograph, HP 6890/5973 Gas Chromatograph/Mass Spectrometer, Entech Model 7100A Automated Preconcentrator, 2 Entech Model 7023A-L MiniCan Autosamplers, Entech Model 4600A Dynamic Diluter, Entech Model 3120-A Canister Cleaning System, Perkin-Elmer Spectrum FTIR (Fourier Transform InfraRed) Spectrometer, Perkin-Elmer N6119 Gas Chromatograph, Perkin-Elmer Model ATD Thermal Desorber, SRI Model 8610 Gas Chromatograph and various other ancillary ovens, incubators and electronic balances. Additionally this laboratory is equipped with a central vacuum and medical grade compressed air system and a Millipore Direct Q5 water purification system.

Strategic Goals: Inhalation



Notes:

Analytical Chemistry Laboratory - Bldg 13 (4)

Colorimetric Indicator Research Display

- Development of Colorimetric Indicators: A New Technique to Determine Acid, Base, and Aldehyde Contaminations
- The objective of this study was to develop new colorimetric indicator pads for detecting acid, base, and aldehyde contaminations. Acid, base, and aldehyde indicators were synthesized and indicator pads were designed and fabricated. Each indicator pad carries a reagent, which responds to the appropriate chemical contaminant by producing a color change. The sensitivity of each indicator was determined using the modified ASTM F-739. The indicator pads were used to detect the appropriate chemical group permeating through the glove materials using the Thermo-Hand method. Breakthrough times for commonly used chemical glove materials were determined. Quantification was performed for test chemicals by gas chromatography following solvent desorption. The newly developed indicator pads could find utility in detecting, collecting, and quantitatively analyzing chemical permeation in both the liquid and vapor phases.

Strategic Goals: Dermal



Notes:

Microbiology Laboratory – Bldg 13 (5)

Pandemic Research: Reusability of FFR (BARTS)

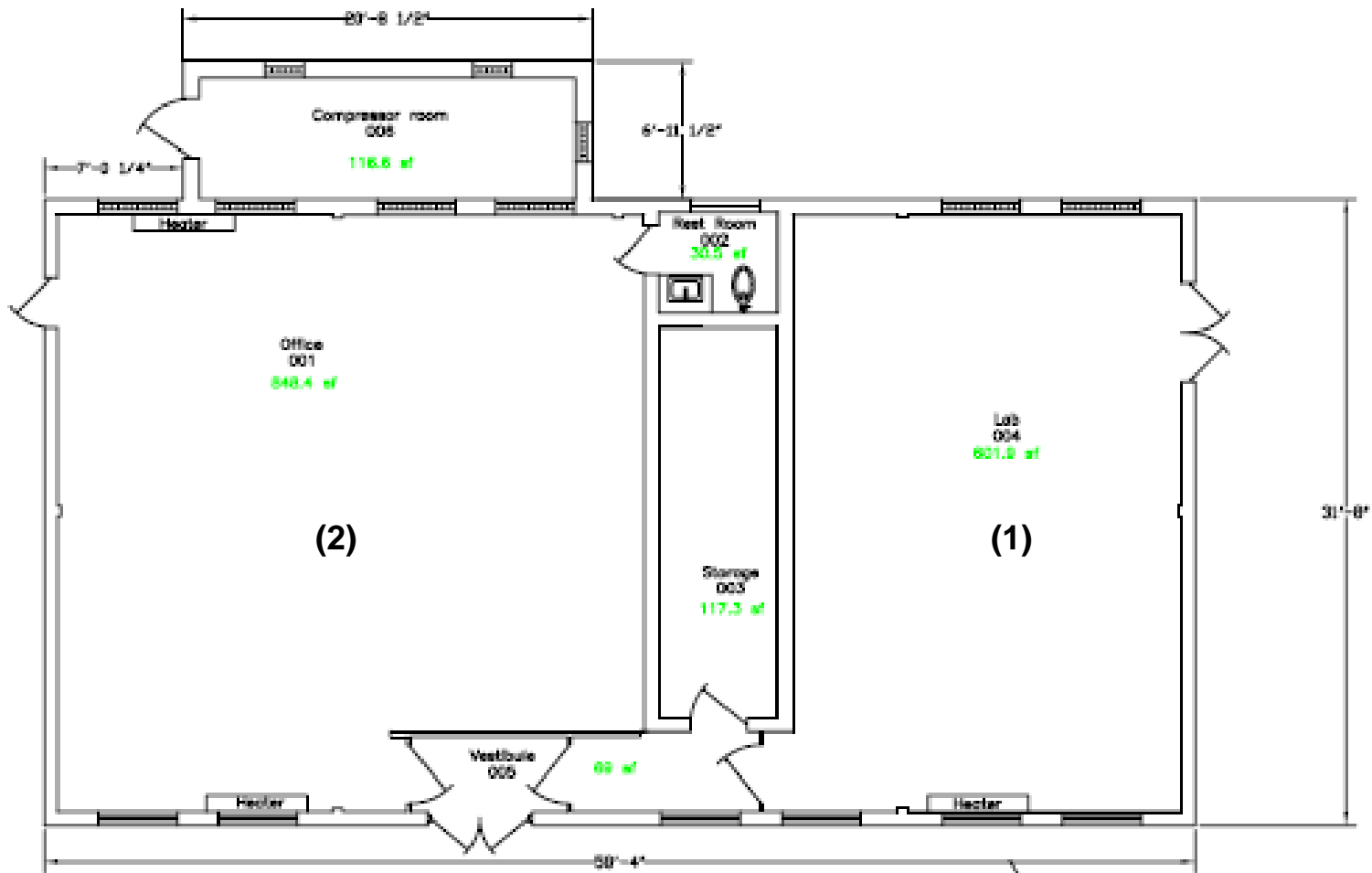
- The Microbiology Laboratory is one component of the laboratory complex particularly suited for conducting standard and routine microbiological experiments. These experiments are conducted under the protection of a SterilGARD III Biological Safety Cabinet to ensure the bioaerosol safety of the associated researchers. A Steri-Cult CO2 Controlled Humidity Incubator for culturing bacteria and viruses is used in the assessment of decontamination efficacy for biological challenges to healthcare workers. The incubator provides a control of temperature and humidity allowing for the simulation of various environmental conditions that may be encountered during respirator use and storage and offers a haven of optimum growth conditions for various biological specimens. An Eddy Jet Spiral Plater and Flash and Grow Colony Counter automate the enumeration of bacteria and virus cultures.
- Facilities include a Market Forge Automatic Sterilmatic Steam Pressure Sterilizer, Thermo Electron Corporation Multipurpose Refrigerated Centrifuge, Gyromax Orbital Incubator Shaker, New Brunswick Scientific Co. Tissue Culture Roller Drum, and sundry other equipment useful in microbiological studies.

Strategic Goals: Inhalation



Notes:

Bldg 2 Floor Plan - Map Key E



Building #2
Plan View
1991.3 GSF

Life Support Laboratory - Bldg 2 (1)

Long-Term Field Evaluation of SCSRs

- The Life Support Laboratory has been developed to test all aspects of the performance of closed-circuit breathing apparatus (CCBA), a complex type of respiratory protective equipment used mainly for underground coal mining emergencies. The Lab contains an Automated Breathing and Metabolic Simulator and a treadmill, both with monitoring instrumentation to evaluate closed-circuit breathing apparatus for human performance stressors – levels of inhaled CO₂, O₂, wet- and dry-bulb temperatures, and breathing pressures. The Life Support Lab is used for the evaluation of Self-Contained Self-Rescuers (SCSRs) deployed in underground coal mines: the Long-Term Field Evaluation of SCSRs. This program includes targeting, collecting, replacing, and testing over 200 SCSR per year. In addition to performance testing, the evaluation includes assessment of the adequacy of in-mine inspection, for damage to the unit, and reporting the occurrence of hidden damage (primary concern), whether from manufacturing defects, environmental degradation, or deployment impact.

Strategic Goals: Inhalation



Notes:

Man Test Certification Laboratory - Bldg 2 (2)

Certification Man Tests

- The Man Test Certification Laboratory is a group of three facilities (Automated Breathing and Metabolic Simulator Laboratory, Long-Term Field Evaluation of Closed Circuit Escape Apparatus and Man Test Certification Laboratory - Self Contained Breathing apparatus).
- The SCBA testing requirements include a series of man tests during which human test subjects are required to use the breathing apparatus while performing a set of work tasks. The series of man tests are called Test 1 through Test 4. Test 1 familiarizes the test subject with the apparatus; Tests 2 and 3 involve more difficult work tasks while also evaluating the comfort and fit; and Test 4 provides the most severe physiological test. The set of work tasks in each test is dependent on the service time (anticipated life) of the apparatus; that is, 15 minutes, 30 minutes, etc. The man tests call for crawling on hands and knees, walking, and running, all of which are performed on a level treadmill at 1.5, 3.0, and 6.0 mph, respectively. The laddermill (vertical treadmill) is also used, but as a safety precaution it is inclined at 30° from the vertical instead of 15°. The speed is increased in order to maintain the same vertical speed because the physiological responses are a function of the vertical work. An overcast in underground mines is a device which allows one air current to cross over another without interruption. During federal man tests a test subject is required to carry a 50 lb. sack over a simulated overcast. Substitution for the overcast activity of treadmill walking at 4.7 mph can be made without change in the physiological cost. The physiological requirements of pulmonary ventilation, oxygen uptake, and carbon dioxide elimination change as the man proceeds from one work task to the next. Detailed knowledge of these physiological requirements is necessary for the proper design and approval of breathing apparatus.

Strategic Goals: Inhalation



Notes:

Bldg 104 Floor Plan - Map Key F



Building #104
708.61 GSF

High Flow Aerosol Test Laboratory - Bldg 104

High Flow Aerosol Tests

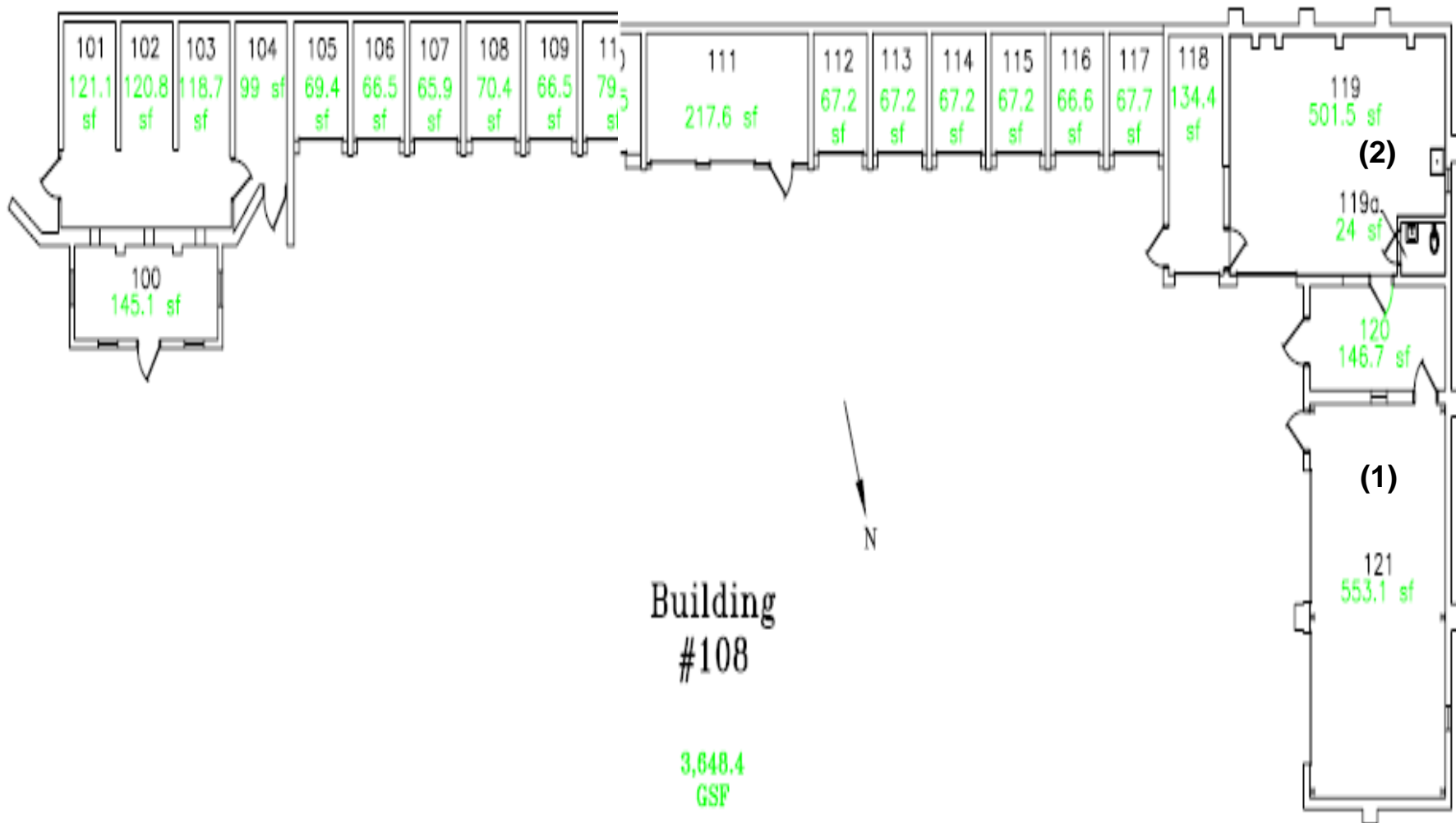
- NIOSH currently has two high-flow filter testers to perform particulate penetration testing of filters, respirator cartridges, and filter media at gas flow rates up to 500 standard liters/minute. These two high-flow filter testers include a TSI Inc. Certitest Model 3120 Automated Filter Tester and an Air Techniques International TDA-500P Penetrometer. Both high-flow filter testers use dioctyl phthalate (DOP) to generate an aerosol with a count median particle diameter of 0.19 to 0.20 micron (meets 42 CFR Part 84) and provide fast, reliable filter efficiency measurements for penetrations as low as 0.001% (99.999% efficiency). Both filter testers contain microprocessors to control the test process and provide outputs from test instruments for gas flow rate, filter test bed differential pressure, and aerosol concentration upstream and downstream of the filter test bed. Light-scattering photometer technology is employed for aerosol detection whereby the particle concentration upstream of the filter being tested is compared to the downstream particle concentration measurement. Due to the higher pressure drop across the filter bed associated with high-flow testing (>100 standard liters/minute), both filter testers use a stand-alone vacuum pump to draw the aerosol-laden gas stream through the aerosol transport system. A TSI Model 3080 Electrostatic Classifier and a TSI Model 3025A Condensation Particle Counter are being used to characterize the aerosol generated by each filter tester.

Strategic Goals: Inhalation



Notes:

Bldg 108 Floor Plan – Map Key G



Firefighter SCBA Evaluation Laboratory - Bldg 108 (1)

Firefighter SCBA Evaluations

- The Firefighter SCBA Evaluation Laboratory is used for the inspection and testing of self-contained breathing apparatus which have been involved in firefighter injuries or fatalities. It includes a 6000 psi breathing air compressor and safety enclosure for filling SCBA cylinders. Video recording equipment is used to document the inspection and testing process.
- There is equipment for performing the following NIOSH certification tests: Positive Pressure Test, Rated Service Time Test, Gas Flow Test, and Remaining Service Life Indicator Test. In addition, equipment for conducting the NFPA Air Flow Performance Test is located in the laboratory.

Strategic Goals: Inhalation



Notes:

Firefighter SCBA Evaluation Laboratory – Bldg 108 (2)

Personal Alert Safety Systems (PASS) Display

- The purpose of this project is to investigate emergency responders', especially fire fighters, reports of high temperature exposures causing the loudness of PASS alarm signals to be reduced. This reduction in loudness can cause the alarm signal to become indistinguishable from background noise at the incident scene.
- This problem was uncovered by the National Institute for Occupational Safety and Health's (NIOSH) Fire Fighter Fatality Investigation and Prevention Program (FFFIPP). During the investigation of four fire fighter fatalities that occurred from 2001 to 2004, the PASS alarm signals were not heard or were barely audible. The PASS had been certified as compliant to NFPA 1982, Standard on Personal Alert Safety Systems (PASS), 1998 Edition, and involved both stand-alone PASS and SCBA-integrated PASS. The FFFIPP brought the issue to the attention of the NFPA Technical Committee on Electronic Safety Equipment
- Laboratory testing of PASS by the National Institute for Standards and Technology's (NIST) Fire Research Division has shown that this sound reduction begins to occur at temperatures as low as 300° F (150° C) and affected all PASS evaluated by NIST that were certified to the 1998 edition and earlier editions of NFPA 1982.
- NIOSH, National Personal Protective Technology Laboratory (NPPTL) established an email address specifically as the NIOSH receiving point for fire and emergency services personnel to submit information related to a Dec 5, 2005, National Fire Protection Association (NFPA) notice entitled; "PASS alarm signals can fail at high temperatures.". NPPTL will assist the certifying authority, SEI, in evaluating information on in-service PASS performance issues for presentation to the NFPA Technical Committee on Electronic Safety Equipment. No information on performance issues related to PASS systems have been received.
- Fire fighters and other emergency responders should continue to activate and wear PASS whenever in hazardous areas of any incident, but should also be aware of the possibility that hostile conditions may adversely affect the operation of PASS.

Strategic Goals: Injury



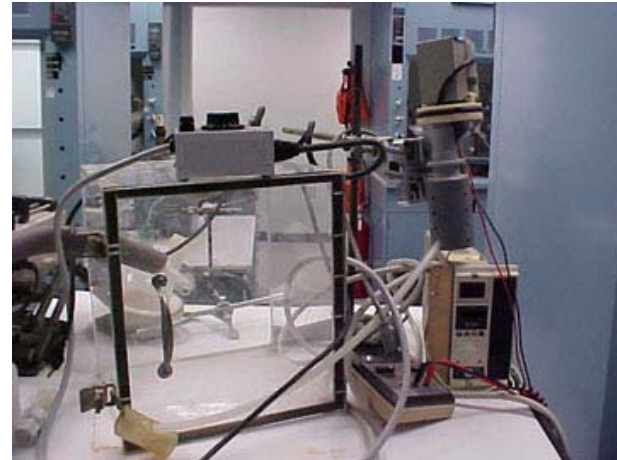
Notes:

Corrosive Gas Testing Laboratory - Bldg 108 (3)

Corrosive Gas Testing

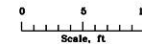
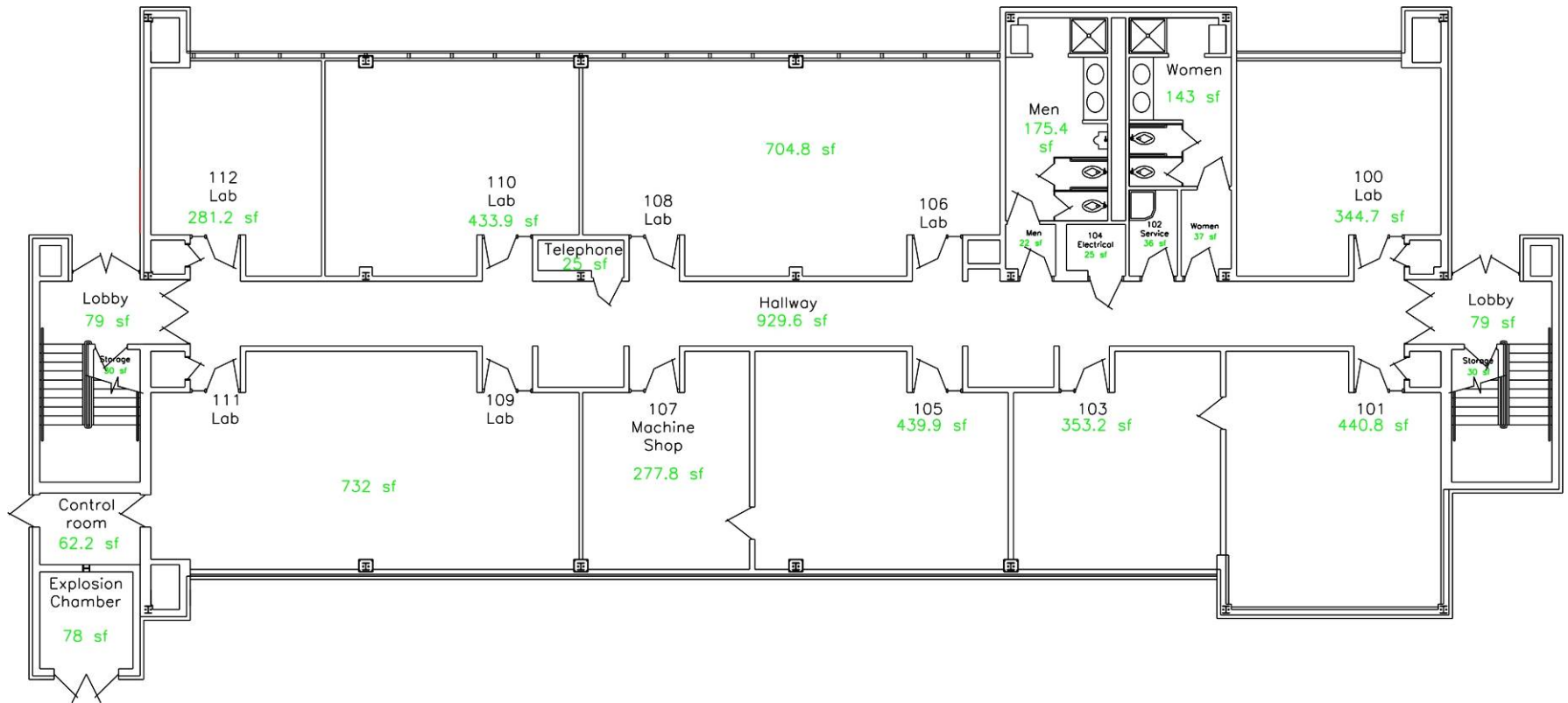
- The Corrosive Gas Testing Laboratory is used for respirator cartridge and canister testing under the NIOSH respirator certification program. Corrosive gases for which respirators may be approved include chlorine, chlorine dioxide, hydrogen chloride, hydrogen fluoride, CS tear gas and CN tear gas. The laboratory may also be used for testing against mercury vapor. The laboratory has 2 fume hoods in which the testing is performed. Test gas mixtures are made using Model HCS-401 Miller-Nelson Flow, Temperature and Humidity Controllers with the introduction of measured amounts of pure gases to create the required airflows and concentrations of challenge gases. The challenge gases are passed through the respirator cartridges, canisters or powered air-purifying blower assemblies with cartridges mounted in a test chamber. Challenge or upstream concentrations are measured by using the Radiometer America Multi-Titration System or Thermo Spectronic Genesys 10 Spectrophotometer. Certified calibration gases are used to calibrate the detectors. Relative humidity and temperature are measured with Edge Tech Model 2000 Dew-Prime II chilled-mirror type hygrometers. Downstream or breakthrough detection is performed with Interscan or CEA Instrument detectors or the UV-VIS spectrophotometer, in the case of tear gas. Mercury is detected with Arizona Instruments Mercury Vapor Analyzer. Airflows are calibrated with American Meter Co. dry test meters and Gilibrator primary standard airflow calibrator.

Strategic Goals: Inhalation



Notes:

Bldg 143 Floor Plan - Map Key H



Building #143
FIRST FLOOR PLAN VIEW

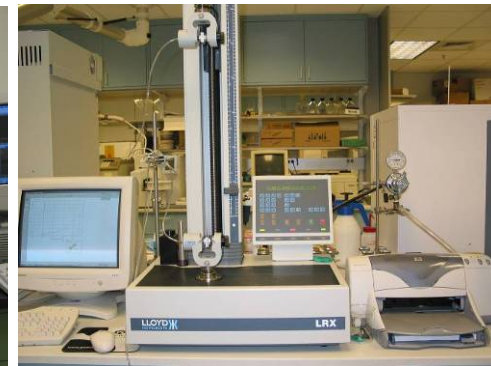
6,850.6 GSF

Chemical Protective Clothing Laboratory - Bldg 143

Chemical Protective Clothing Research

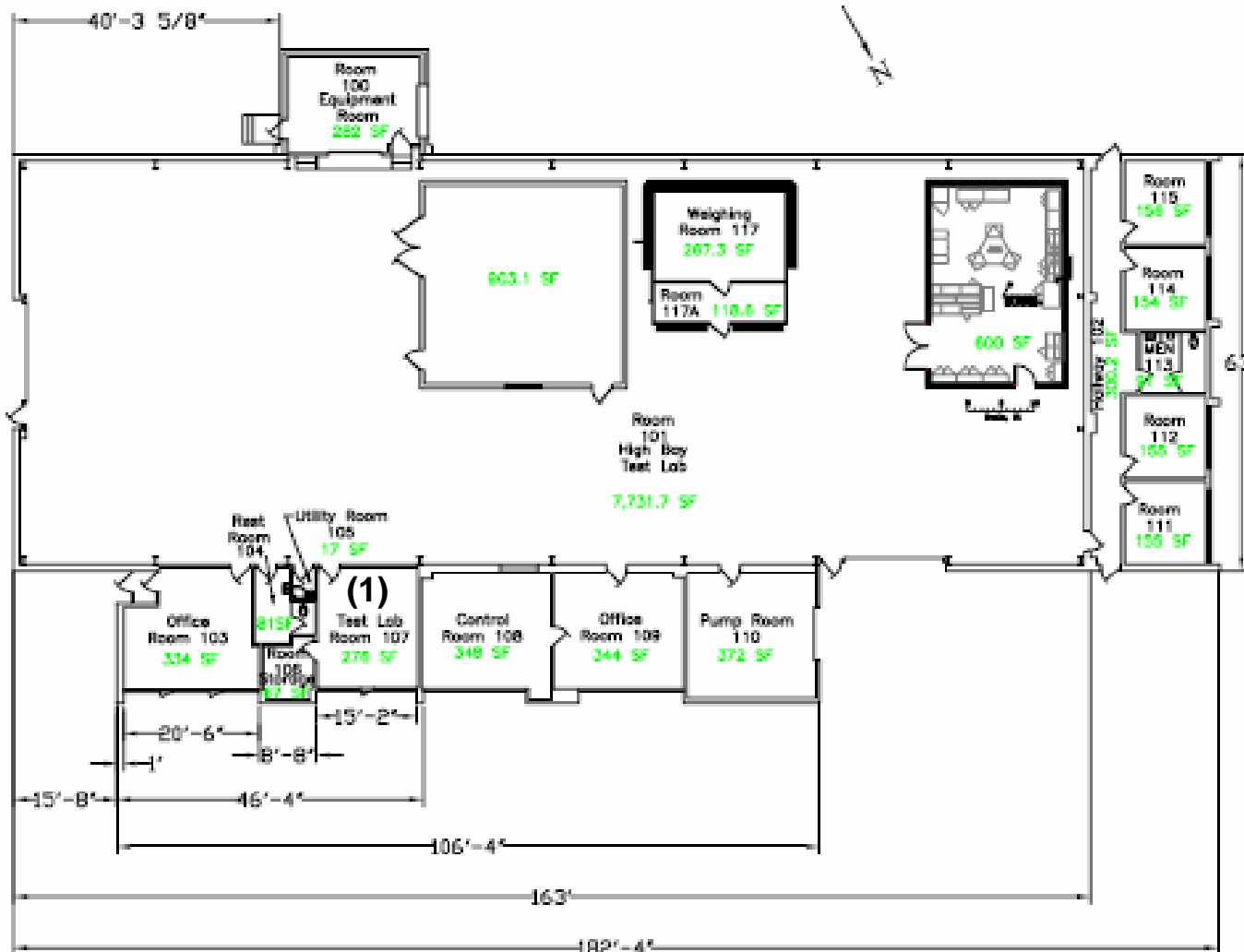
- The chemical protective clothing (CPC) laboratory (approximately 800 sq ft) contains various instruments to conduct a broad range of studies in chemical permeation and penetration through CPC materials and deterioration of the materials' physical properties as well. These include an Agilent 6890 gas chromatography/5973 mass spectrometry (GC/MS) system, a Hitachi D-7000 High Performance Liquid Chromatography (HPLC) system, and two MIRAN 1A gas analyzers for determining chemical permeation and penetration; a LLOYD/AMETAK Single Column Testing System for measuring tensile strength and elongation of CPC materials as indicators of material degradation after repeated exposures and decontaminations, etc. The research program is aimed at protecting the skin from chemical hazards that may be encountered in the workplace or during a terrorist attack.

Strategic Goals: Dermal



Notes:

Bldg 144 Floor Plan - Map Key I



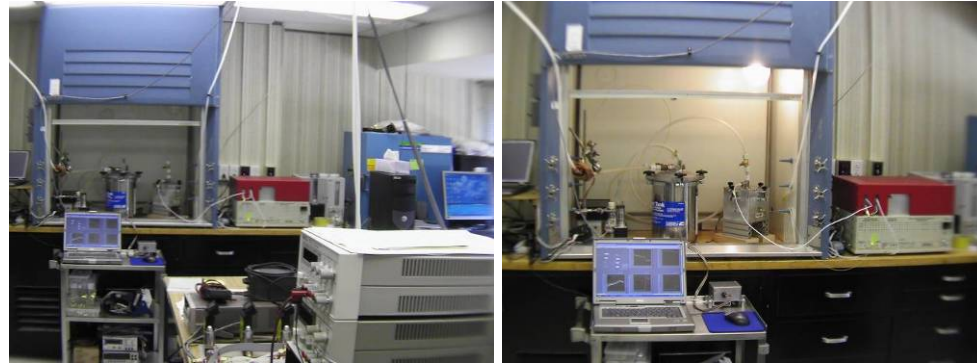
Building #144
FIRST FLOOR PLAN VIEW
 13,784 GSF

Sensor Technology Laboratory - Bldg 144 (1)

Sensor Technology Research

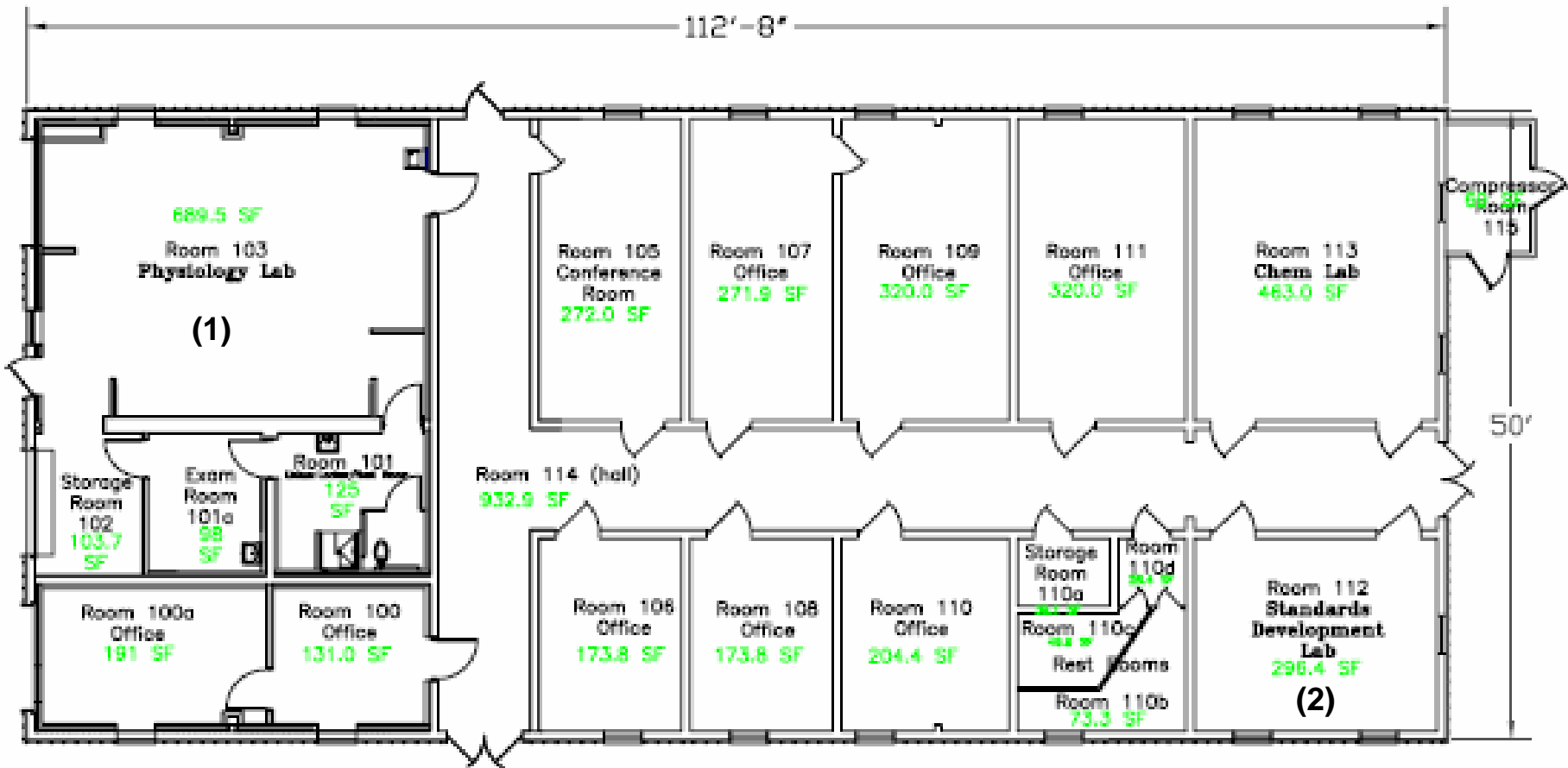
- The Sensor Technology Laboratory is a 350 sq ft laboratory with a fume hood and bench space. Several setups are available to evaluate micro chemical sensors with environmental controls of temperature, contaminate concentration, flow rate, and relative humidity. The flows range from a liter per minute to several hundred liters per minute and humidity from 10 percent to 100 percent. Organic contaminants can be generated from parts per billion (ppb) to thousands of parts per million (ppm). Sensors can be evaluated in both a purely scientific experimental mode as well as an air purifying respirator cartridge simulation mode.
- Electronic equipment is available in this laboratory to conduct electrical evaluations of sensor systems by such means as generation of I-V curves.
- Equipment available in the laboratory includes, a respirator cartridge simulator, several Miller/Nelson Research model HCS-401 flow, temperature and humidity controlling units, laptop computers loaded with LabView data collection software, Agilent No. 3497 source meter, an Agilent No. E3647A data logger, a Keithley function generator No. 2700, and a Keithley 2400 source meter. A SRI, Inc model 8610 gas chromatograph and an EdgeTeck Dewmaster humidity meter, a SH55E Scott Breathing Simulator manufactured by Scott Aviation Corporation, an M6 pump manufactured by Valco Instruments Co. and a dry gas meter manufactured by American Meter Co. completes the inventory of major equipment used in the laboratory.

Strategic Goals: Inhalation



Notes:

Bldg 29 Floor Plan - Map Key J



Building 29

5,711.5 GSF

Human Research Physiology Laboratory - Bldg 29 (1)

Human Physiology Research

- The Research Physiology Laboratory is a 1200 square foot, temperature- controlled facility that comprises a main research laboratory, physician's examination room, and a research subject bathroom. The research laboratory is utilized to conduct human physiology experiments and houses associated instrumentation including a Vmax 229D Pulmonary Function / Cardiopulmonary Exercise Testing Instrument used to measure expired respiratory gases and monitor cardiac function during exercise testing.
- Ancillary equipment includes AEI Technologies oxygen and carbon dioxide sensors and analyzers, a Trackmaster exercise treadmill, Dinamap automated sphygmomanometer, gurney, GSE 335 automated weighing scale, dedicated research computers, and full resuscitation equipment including a Banyan 900 resuscitation kit (ambu bag, endotracheal intubation equipment, drugs, etc.), suction apparatus, and supplemental oxygen. The physician's office is utilized by the research medical officer to conduct physical examinations and instrumentation of research subjects and includes standard examination equipment including an examination table, Welch-Allyn otoscope and ophthalmoscope combination, Baumann sphygmomanometer, reflex hammer and kits for drug and pregnancy testing. The subjects' bathrooms offer a standard commode and a shower and sink to enable subjects to refresh themselves after exercising.

Strategic Goals: Inhalation



Notes:

Automated Breathing and Metabolic Simulator Research Laboratory - Bldg 29 (2)

Human Metabolic Response Research

- The ABMS Research Laboratory is a 480 square foot facility dedicated to respirator research using the Automated Breathing and Metabolic Simulator (ABMS). The computer-controlled ABMS produces carbon dioxide (CO₂) and simulates oxygen (O₂) consumption at fixed breathing frequencies and tidal volumes to simulate human metabolic processes. The ABMS is an ideal device for evaluating inhaled CO₂ and O₂ concentrations in respirators due to its high degree of accuracy and repeatability in duplicating human CO₂ production and O₂ consumption. In the past, the ABMS was used in a NORA-funded project to characterize the inhaled CO₂ and O₂ concentrations and breathing pressures of 90 various models of powered and non-powered air-purifying respirators, supplied-air respirators, and gas masks. The egress helmet used by NASA shuttle astronauts, escape hood air-purifying respirators, and self-contained self-rescuer (SCSR) respirators used for escape by miners also have been investigated using the ABMS.

Strategic Goals: Inhalation



Notes: