



# **Joint Service General Purpose Mask (JSGPM) and Joint Service Chemical Environment Survivability Mask (JSCESM)**

**March 2006**



# JSGPM PROGRAM HIGHLIGHTS

## ♦ Mission:

- Provide Face, Eye and Respiratory Protection from Battlefield Concentrations of CB Agents, Toxins, Toxic Industrial Materials and Radioactive Particulate Matter

## ♦ Key Events:

- Development Program Start – 19 Oct 98
- PDRR Contract Award – 30 Mar 00
- System Demo Option Award – 04 Apr 02
- LRIP Option Award – 30 Aug 05
- FRP Decision – 1QFY07
- FUE – 1QFY07

## ♦ Team:

- JPMO - IP, JS IPT, Avon, SAIC



## ♦ User:

- All Services - Replaces Current M40/M42 and MCU-2/P Series Protective Masks

## ♦ Target Capabilities:

- Improved Protection
- Improved Field of View
- Lower Breathing Resistance
- Reduced Weight/Bulk
- Improved Compatibility



# DESIGN TO REQUIREMENTS

## ➤ Key Performance Parameters:

- **Mask Shall Provide Continuous Above the Neck Eye/Respiratory/Skin Protection Against Vapor, Liquid, Aerosol, and Particulate Threat Agents for 24 Hours After One Year of Continuous Exposure to an Uncontaminated Environment**
- **Filter Shall Provide Continuous Eye/Respiratory/Skin Protection Against Vapor, Liquid, Aerosol, and Particulate Threat Agents for 24 Hours**
- **The Mask Including Outserts, if Needed, Shall Permit Unobstructed and Undistorted Forward Vision**
- **The Mask Shall Provide a Durable Drinking Capability**
- **The Mask and Mask Carrier Shall be Compatible With Current and Co-Development Chemical/Biological Garments**



# DESIGN TO REQUIREMENTS

## ➤ Critical Threshold Requirements:

- **Protect Against Toxic Industrial Materials (TIMS)**
- **Protection Factor Greater Than 10,000**
- **Significant Weight and Bulk Reduction Compared to M40/M42/MCU-2/P Masks (Mask  $\leq$  1.7 lbs., System  $\leq$  4.0 lbs.)**
- **Exhalation Breathing Resistance  $\leq$  20 mm of Water and Inhalation Resistance  $\leq$  30 mm of Water at 85 LPM**
- **Improved Field of View**
- **Compatibility With All Service Individual Clothing and Equipment, and With Individual and Crew Served Weapon Systems and Optics**
- **Improved Comfort and Reduced Physiological Burden**

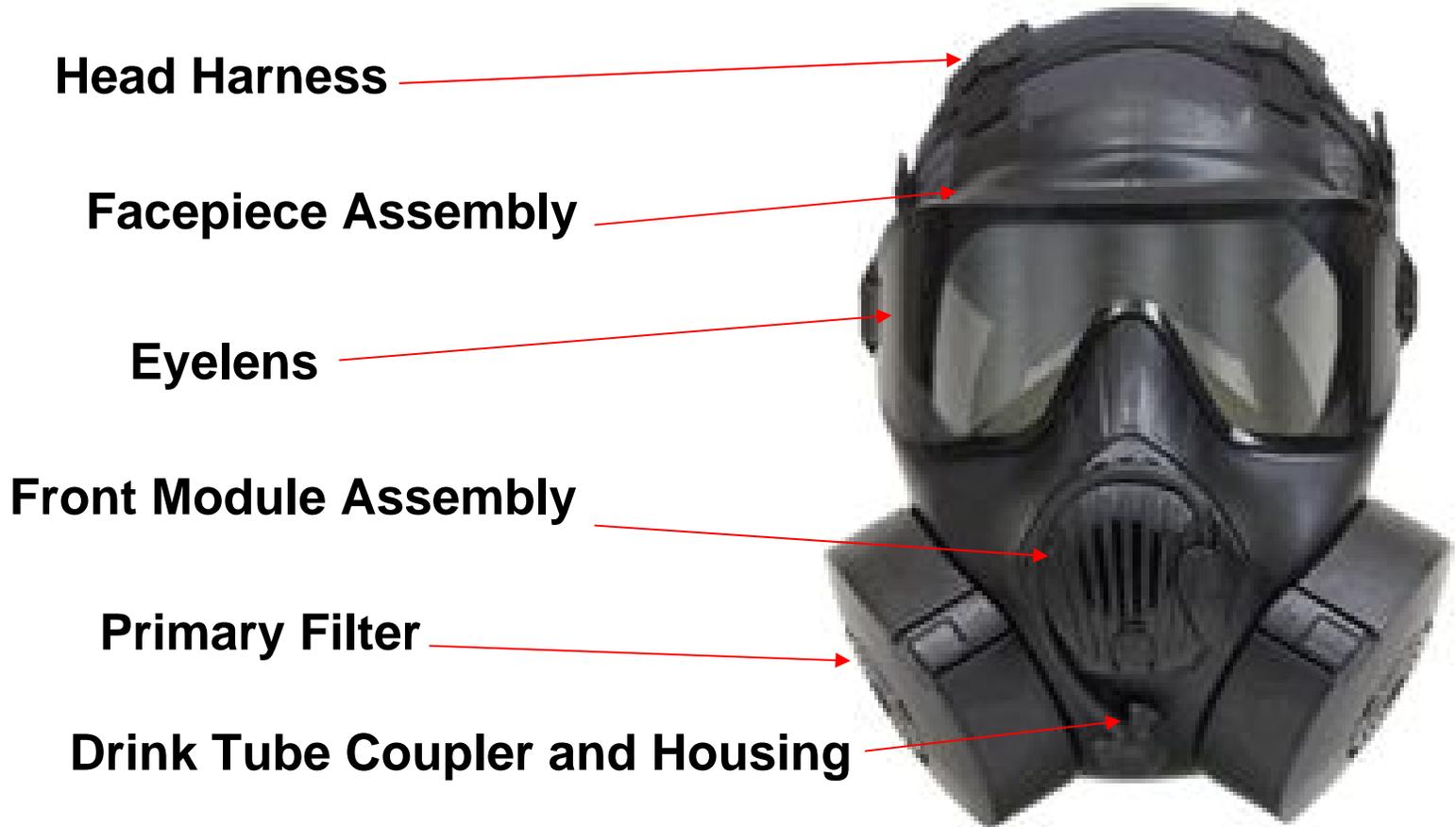


## FEATURES INCORPORATED

- **No buckles in the forehead**
- **Minimal parts to facilitate maintenance and logistic support**
- **Color coding of parts to facilitate maintenance**
- **All masks with an internal microphone capability with a microphone pass through**
- **Low resistance outlet valve/speaking module**
- **Pop valve to allow changeout in a contaminated environment**
- **Conformal twin filters (Primary and Secondary)**
- **Locking tabs**
- **Improved drink system**
- **Flat periphery in the forehead for helmet compatibility**
- **Mask Carrier/Accessory Bag**



## MAJOR FEATURES





# STATE OF THE ART TECHNOLOGY

- Polynomial spline visor providing excellent equipment interface





# STATE OF THE ART TECHNOLOGY

## Facepiece Assembly

- **Butyl/Silicone (5%) blend**





# STATE OF THE ART TECHNOLOGY

- Filter Time Patch to assess filter life





# STATE OF THE ART TECHNOLOGY

## High Efficiency Synthetic Particulate Air (HESPA) filtration material

- HESPA offers a couple of advantages to the JSGPM filter program. First our filter dimension could remain the same but its performance greatly improved and when combined with the development of pleat encapsulation technology, the shape of the filter is no longer confined to the conventional square/rectangle or round/cylindrical flat shape, thereby providing greater flexibility in equipment design and interface.





# STATE OF THE ART TECHNOLOGY

- Ethylene oxide, ammonia, and formaldehyde filtration media in a secondary filter





## STATE OF THE ART TECHNOLOGY

- One of the goals of the Carrier IPT was to develop a design to keep out dust and dirt beyond the capability of the currently fielded carriers. This goal is in response to the after action reports from Operation Enduring Freedom and Operation Iraqi Freedom.





# Joint Service Chemical Environment Survivability Mask (JSCESM)

- **Mission**

- Provide a Lightweight/Disposable Mask that Provides 2-8 Hours of Respiratory and Face Protection Against Vapor and Aerosol CB Agents in Low Levels of Contamination

- **Key Events**

- JORD Update Approved – Jan 04
- Program Initiation (MS B) – Aug 03
- Contract Award – Nov 03
- Milestone C (Block I) – Jan 06

- **Team:**

- Development Lead – JPMO IP
- JIPT: USSOCOM, USAF
- DOD Interest : USA, USMC

- **User**

- USSOCOM, USAF, Others TBD



- **Target Capabilities**

- One Size Fits All
- Protection for 2 Hrs (Block I), 6 Hrs, 8 Hrs [O] (Block II)
- Package size 128 in<sup>3</sup>, 50 in<sup>3</sup> [O] (Block II)
- Drinking Capability Without Compromising CB Protection (Block II)
- Provide an Alternative for Commanders to Use for Force Protection



## Program Need

- **Requirement established for Joint Service Chemical Environment Survivability Mask, ORD – 8 January 2004**
  - **The ORD describes a lightweight, low bulk, short duration, one-time-use mask that is one-size-fits-all and provides above the neck, respiratory, and ocular protection against low-level threat NBC attacks as opposed to direct gross contamination, where standard Mission Oriented Protective Posture (MOPP) protective equipment would be used**
  - **The JSCESM is intended to provide commanders at all levels with greater options for protection, especially in operations other than war, such as emergency evacuation and first responder personnel**
  - **The JSCESM may also be worn for short duration missions to provide above-the-neck protection in operations in which forces may incur collateral NBC threats (e.g., downwind effect, encountering contaminated areas in route to targets, or when evacuating hazardous areas).**



## Capabilities Required

- **JSCESM shall:**
  - **Provide above the Neck Protection against low level NBC Threats for 2 hours, 8 hours [0]**
  - **Be one Size Fits All**
  - **Weigh less than 2 lbs**
  - **Fit into the cargo pocket of a Battle Dress Uniform**
  - **Provide a Protection Factor greater than 1000**
  - **Fit the 2<sup>nd</sup> to 98<sup>th</sup> percentile population**
  - **Have an inhalation breathing resistance less than 70 mm of water**
  - **Have an exhalation breathing resistance less than 20 mm of water**
  - **Have 98% off the shelf reliability**

