

4.0 REQUIREMENTS

This section specifies the required system modes and required functional capabilities of VIPPS. It will consist of software and a tailored suite of Government Off-The-Shelf (GOTS), Commercial Off-The-Shelf (COTS), and/or Non-Developmental Item (NDI) equipment that is integrated and designed in compliance with the Department of Defense (DOD) open system architecture construct. The heart of the Human-System Interface (HSI) is a Command and Control (C²) Operator Console which uses software applications in order to enhance the information available to the operator in order to establish better SA and facilitate tactical decision making. The VIPPS Operator Console receives and displays track data from the Camera Sensor System (CSS), displays track data as video from the CSS, and controls lethal effectors, and warning devices.

4.1 System States and Modes

For the purposes of this specification, the following definitions apply:

- System state - A physical or operational condition that characterizes the status of the system at a point in time.

[4.1.a] All VIPPS operating stations shall provide a clear and unambiguous indication of the current VIPPS State.

VIPPS Block 0 System States are illustrated in Figure 4-1 below.

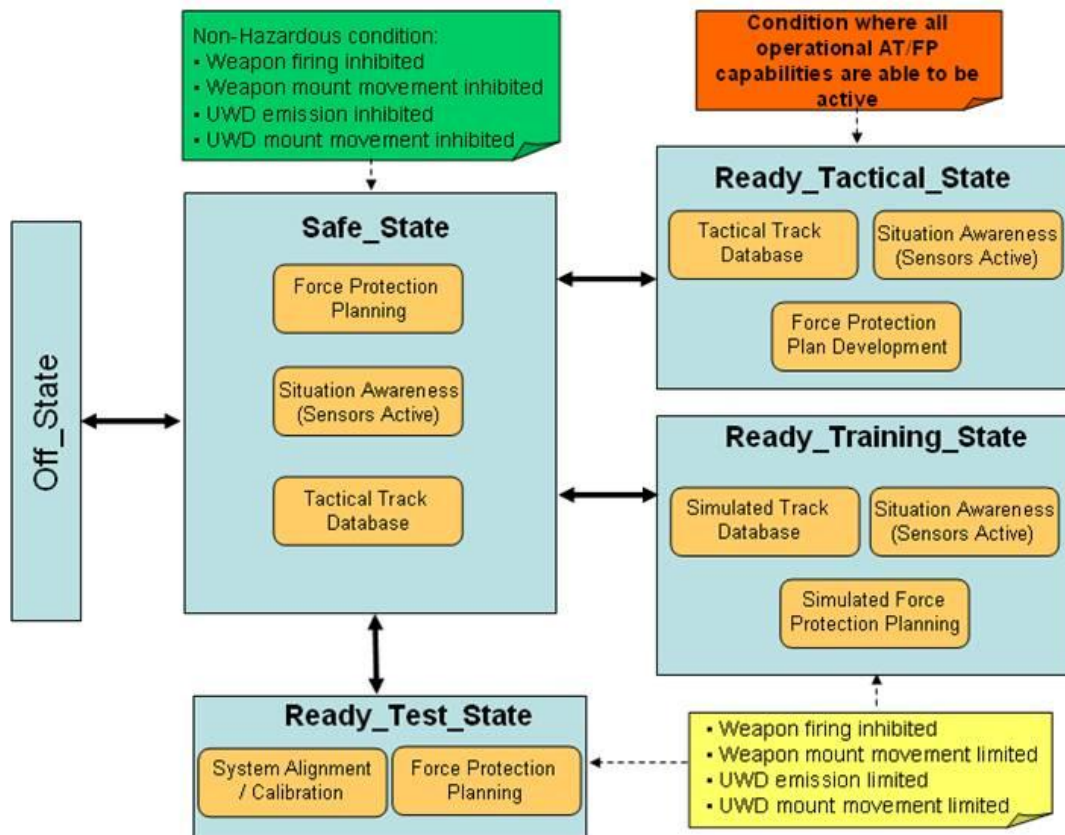


Figure 4-1 VIPPS Block 0 System States

4.1.1 System States

[4.1.1.a] VIPPS shall have five system states:

- [4.1.1.a.1] Off
- [4.1.1.a.2] Safe
- [4.1.1.a.3] Ready Test
- [4.1.1.a.4] Ready Tactical
- [4.1.1.a.5] Ready Training

[4.1.1.b] The system shall exist in only one state at any point in time.

[4.1.1.c] VIPPS shall only allow operators to control sensors and weapons that are in the same State of operation as the operator (i.e., Safe, Ready Test, Ready Tactical, or Ready Training).

4.1.1.1 Off State

Off State is the state of the system when no power is present.

[4.1.1.1.a] VIPPS maintenance shall only be performed with VIPPS in the Off State.

[4.1.1.1.b] VIPPS shall transition to the Safe State when power is applied.

[4.1.1.1.c] VIPPS shall not directly transition from the Off State to any Ready State.

[4.1.1.1.d] To achieve Off State from a power down action, power down sequencing shall be performed.

[4.1.1.1.e] Prior to achieving final Off State, saving of data files shall be performed.

4.1.1.2 Safe State

A Safe State is defined as a condition for each safety critical subsystem of VIPPS in which no set of circumstances will engage or activate that critical VIPPS Subsystem. Safety Critical VIPPS Subsystems include the lethal effectors and Unambiguous Warning devices (UWD).

[4.1.1.2.a] The minimum system configuration required for the Safe State shall consist of central processing and an operational VIPPS Operator Console. The system shall not transition to any Ready state unless Safe State minimum configuration is achieved and verified.

[4.1.1.2.b] VIPPS capabilities in the Safe State shall be limited to the performance of operability checks and communications necessary to assess system and subsystem readiness.

[4.1.1.2.c] VIPPS shall transition the system to the Safe State after verification of minimum Safe State configuration. Results of built in tests, software loads and system configuration statuses shall be provided to the operator upon entering the Safe State.

- [4.1.1.2.c.1] System “log in” shall be performed.
- [4.1.1.2.c.2] Hardware initialization shall be completed and verified.
- [4.1.1.2.c.3] Firmware initialization shall be completed and verified.
- [4.1.1.2.c.4] Software load shall be completed and verified.
- [4.1.1.2.c.5] Start up checks shall be completed.
- [4.1.1.2.c.6] Automatic Built-In Test (BIT) processing, including Power-up BIT (PBIT), shall be completed.

[4.1.1.2.d] In the Safe State, VIPPS permits only those system capabilities necessary to support system readiness assessment. VIPPS lethal engagement and unambiguous warning capabilities are inhibited in the Safe State.

- [4.1.1.2.d.1] In the Safe State, weapon firing shall be disabled.
- [4.1.1.2.d.2] In the Safe State, weapon mount movement shall be disabled.
- [4.1.1.2.d.3] In the Safe State, UWD emission shall be disabled.

- [4.1.1.2.d.4] In the Safe State, movement of the UWD shall be disabled.
- [4.1.1.2.d.5] In the Safe State, movement of the Sensors shall be allowed.
- [4.1.1.2.d.6] VIPPS shall not transition to the Safe State when active tactical engagements are in progress.
- [4.1.1.2.d.7] Upon transitioning to the Safe State, the VIPPS shall terminate any active training.
- [4.1.1.2.d.8] In the Safe State, the VIPPS shall not generate any Lethal Effectors engagement directives/designations.
- [4.1.1.2.d.9] To transition from the Safe State to a Ready State, VIPPS shall require the operator to select a specific Ready State option (i.e. Ready Test, Ready Tactical, or Ready Training).
- [4.1.1.2.d.10] Prior to VIPPS transition from the Safe State to the selected Ready State, VIPPS shall verify that the elements required for a minimum configuration for the selected Ready State are currently safe, available, and ready to transition to the selected Ready State.
- [4.1.1.2.d.11] VIPPS shall provide the capability to bypass the minimum configuration required to transition from the Safe State to the selected Ready State.

[4.1.1.2.e] VIPPS shall only return to the Off State by transitioning through the Safe State.

[4.1.1.2.f] VIPPS Safe State shall prevent all safety critical subsystems from being activated such that energy is released.

4.1.1.3 Ready Test State

Ready Test State allows full testing of VIPPS to be conducted, excluding weapon firing.

[4.1.1.3.a] Ready Test state shall include provisions for developing Force Protection (FP) plans.

[4.1.1.3.b] Ready Test State shall include provisions to test VIPPS; limited only in that weapon firing is prohibited.

[4.1.1.3.c] Ready Test State shall include provisions to perform:

- [4.1.1.3.c.1] System Health Checks and Monitoring,
- [4.1.1.3.c.2] Calibration of Sensors,
- [4.1.1.3.c.3] Calibration of weapons / weapon mounted video,
- [4.1.1.3.c.4] Calibration of UWDs, and
- [4.1.1.3.c.5] Registration to Household Reference Point.

[4.1.1.3.d] The review of VIPPS activity and data shall include provisions for the reconstruction of VIPPS activities to include video data, track data, Rule-Based Processing (RBP) data, equipment health and monitoring data, and internal interface

data.

4.1.1.4 Ready Tactical State

Ready Tactical State allows all operational AT/FP capabilities of the VIPPS to be active and used to perform its AT/FP Mission.

[4.1.1.4.a] Ready Tactical State shall include provisions for Force Protection Planning (FPP).

[4.1.1.4.b] Ready Tactical State shall include provisions to perform FP Mission.

[4.1.1.4.c] The minimum system capabilities required to enter the Ready Tactical State shall consist of a situational awareness capability and an engagement capability.

[4.1.1.4.d] Ready Tactical State shall include provisions to review VIPPS activity, including but not limited to, FP plan data, video data, track data, RBP data, equipment health and monitoring data, and internal interface data.

[4.1.1.4.e] VIPPS shall allow for the activation of UWDs in the Ready Tactical State.

[4.1.1.4.f] VIPPS shall allow lethal engagements in the Ready Tactical State.

4.1.1.5 Ready Training State

Ready Training State provides simulations in which non-hazardous system operator training is conducted.

[4.1.1.5.a] Interactive Courseware (ICW) shall be run in Ready Training State.

[4.1.1.5.b] When placed in Ready Training State, the system shall render all weapons safe from firing.

[4.1.1.5.c] When placed in Ready Training State, the system shall allow for reduced emission levels for activated UWDs.

[4.1.1.5.d] The following shall be permitted in Ready Training State:

- [4.1.1.5.d.1] Limited speed Weapon/weapon mount movement,
- [4.1.1.5.d.2] Limited speed UWD movement, and
- [4.1.1.5.d.3] Sensor movement.

[4.1.1.5.e] Ready Training State shall include provisions for developing FP plans.

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[4.1.1.5.f] Ready Training State shall include provisions to review VIPPS activity, including but not limited to, FP plan data, video data, track data, RBP data, equipment health and monitoring data, and external and internal interface data, either individually or in concert with one another.

4.1.2 Transitions

[4.1.2.a] The following state transitions shall be allowed:

- [4.1.2.a.1] Off State to Safe State
- [4.1.2.a.2] Safe State to Off State
- [4.1.2.a.3] Safe State to Ready Test State
- [4.1.2.a.4] Safe State to Ready Tactical State
- [4.1.2.a.5] Safe State to Ready Training State
- [4.1.2.a.6] Ready Test State to Safe State
- [4.1.2.a.7] Ready Tactical State to Safe State
- [4.1.2.a.8] Ready Training State to Safe State

[4.1.2.b] Any other transitions shall not be allowed.

[4.1.2.c] Mode transitions may only be initiated through deliberate operator action.

4.1.3 State Change Directives

[4.1.3.a] Should VIPPS be operating in a Ready State other than Ready Tactical, a change directive to transition VIPPS to Ready Tactical (through Safe State) shall cause the following:

- [4.1.3.a.1] Purge the system of all test related data with the exception of fault detection indications, which impact Tactical operation.
- [4.1.3.a.2] Purge the system of all training related data.
- [4.1.3.a.3] Full transition to the Safe State
- [4.1.3.a.4] Transition to the Ready Tactical State

4.2 System Capability Requirements

VIPPS Block 0 operational capabilities are required to implement FP functions that must be performed by operators in the homes of VIPs; this includes developing and implementing layered surveillance, supporting defense plans, and conducting and coordinating tactical responses. VIPPS functions as a standalone capability with 1-way broadcast interface to local law enforcement. Figure 4-2 shows the VIPPS Capability Block Diagram.