NAVAL SAFETY CENTER
CODE 10 AVIATION SAFETY PROGRAMS
8 JUNE 2020

PHYSIOLOGICAL EVENT (PE)

INVESTIGATIONS

AND

REPORTING

OPERATING GUIDE

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this guide. If you find any mistakes or if you know of a way to improve these procedures, please let us know. Send your recommended changes via electronic mail. Our e-mail address is NAVSAFECEN_CODE14_AEROMED@navy.mil**. A reply will be furnished to you.**

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LIST OF ABBREVIATIONS AND ACRONYMS

AFB	Airframe Bulletin
AHLTA	Armed Forces Health Longitudinal Technology Application
ALIS	Autonomic Logistics Information System
ALSS	Aviation Life Support Systems
AMAT	Aeromedical Action Team
AMB	Aviation Mishap Board
AME	Aviation Structural Mechanic/Safety Equipment
AMSO	Aeromedical Safety Officer
AOS	Aircrew Oxygen Systems
APA	Aerospace Medicine Physician Assistant
AR	Action Request
ASO	Aviation Safety Officer
AZ	Aviation Maintenance Administrationman
BFM	Basic Fighter Maneuvers
BUMED	Bureau of Medicine and Surgery
CAC	Common Access Card
CFIT	Controlled Flight into Terrain
CG	Commanding General
CO	Carbon Monoxide
COG-AE	Cognitive Screening Aeromedical Edition
CPG	Clinical Practice Guideline
CNAF	Commander, Naval Air Forces
CNO	Chief of Naval Operations
CRM	Customer Relationship Management
DCI	Decompression Illness
DMO	Dive Medical Officer
EDS	Evidence Data Sheet
ECS	Environmental Control System
ER	Emergency Room
FAILSAFE	Fleet Air Introduction Liaison of Survival Aircrew Flight Equipment
FAME	F/A-18 Automated Maintenance Environment
FE	Flight Equipment Technician
FS	Flight Surgeon
FSR	Field Service Representative
FST	Fleet Support Team
GLOC	G-Induced Loss of Consciousness
HAZREP	Hazard Report
IN	Initial Notification
ISSC	In-Service Support Center

LIST OF ABBREVIATIONS AND ACRONYMS

JPO	Joint Program Office
JRB	Joint Reserve Base
LOX	Liquid Oxygen
MACE	Military Acute Concussion Evaluation
MAG	Marine Aircraft Group
MAW	Marine Aircraft Wing
MetHb	Methemoglobin
MSL	Mean Sea Level
MU	Memory Unit
NAMI	Naval Aerospace Medicine Institute
NATEC	Naval Air Technical Data and Engineering Service Command
NAWCTSD	Naval Air Warfare Center Training Systems Division
NAVAIR	Naval Air Systems Command
NAVSAFECEN	Naval Safety Center
OBOGS	Onboard Oxygen Generating System
OEM	Original Equipment Manufacturer
PMA	Program Manager Air
PHYSEP	Physiological Episode HAZREP
PE	Physiological Event
PEAT	Physiological Episode Action Team
PEMA	Portable Electronic Maintenance Aid
PERRT	Physiological Event Rapid Response Team
PR	Aircrew Survival Equipmentman
QA	Quality Assurance
RMI	Risk Management Information
ROBD	Reduced-Oxygen Breathing Device
SIR	Safety Investigation Report
TMS	Type Model Series
WESS	Web-Enabled Safety System
WSO	Weapons System Officer

CHAPTER 1

GENERAL INFORMATION

PHYSIOLOGICAL EVENT INVESTIGATIONS AND REPORTING

GENERAL INFORMATION

SCOPE

From as early as 2010, Physiological Events (PEs) were recorded and tracked by the F/A-18 community within Naval Air Systems Command (NAVAIR). However, the number of reported PEs across Naval Aviation illustrated that the scope of the PE problem applied to many Naval aircraft platforms. In 2017, the Physiological Episode Action Team (PEAT) was created by the Chief of Naval Operations (CNO). PEs quickly became the top safety focus for the Naval Aviation Enterprise (NAE), and the entire NAE along with the Bureau of Medicine and Surgery (BUMED) are fully committed to solving this elusive phenomenon.

Through the evolution of the PE investigative process, the Naval Safety Center (NAVSAFECEN) assumed the lead for the PE reporting process in Oct 2017 to provide clear policy and guidance, and to track outcomes for the Fleet under OPNAVINST 3750.6 safety reporting guidelines. The NAVSAFECEN's Web Enabled Safety System (WESS)/Risk Management Information (RMI) must contain all reported PE hazard and mishap events to properly document, archive, as well as provide for current and future safety analyses. It is imperative that all PE stakeholders strive for 100% compliance in reporting with thorough engineering and medical investigations so the NAE can restore confidence in the aircraft, minimize risk to aircrew, and return to 100% focus on mission.

This PE Operating Guide is a comprehensive guide for the end-user designed to facilitate the identification, investigation, and reporting of known or suspected PEs. This document replaces all previous guidance or policy and consolidates the information in a single source operating guide. It is not an instruction, but rather a guide that will allow for flexibility in the process as knowledge is gained. This is the second edition of the PE Operating Guide; originally published on 01APR2019.

DEFINITIONS

PHYSIOLOGICAL EPISODE (PHYSEP Hazard Report)

Per OPNAVINST 3750.6, a Hazard Report that is classified as a Physiological Episode occurs when any of the following conditions exist: Hypoxia, either proven or suspected, Carbon Monoxide Poisoning or other toxic exposure, Decompression Illness, Hyperventilation, Spatial Disorientation, Loss of Consciousness, Unintentional Rapid Decompression (resulting in exposure to personnel to cabin altitudes above flight level 250, regardless of whether dysbarism or hypoxia is a resultant condition), or other physiological, pathological, or physical problems that manifest during or after actual flight. A PHYSEP is reported via HAZREP format unless it rises to the level of a Class D or above aviation mishap as defined in OPNAVINST 3750.6.

PHYSIOLOGICAL EVENT (PE)

A PE differs from, and is a subset of, a standard PHYSEP in that PEs are directly attributed to BOTH a known or suspected aircraft and/or aircrew systems malfunction ***AND*** physiological symptoms experienced by one or more aircrew and/or maintainers. Therefore, ***TWO*** conditions are required to signal a reportable PE. PEs can occur in-flight, on deck, or manifest post-flight with the delayed-onset of aircrew symptoms.

NOTE:
During investigation, it is important to consider that during periods of increased operational tempo, aircrew presenting with symptoms might actually be feeling delayed symptoms from a previous flight.

QUICK DETERMINATION

Aircraft Malfunction (suspected or known) + No Aircrew Symptoms = **HAZREP**

Aircrew Symptoms + No Aircraft/Aircrew Systems Malfunctions = **PHYSEP**

Aircraft/Aircrew Systems Malfunction (suspected or known) + Aircrew Symptoms = **PE**

For more detailed examples, see Appendix 8.

NOTE:
If at any point during the PE investigative process, it is determined that one or both conditions required to report a PE is no longer valid, the PE may be downgraded and reported via a PHYSEP or HAZREP as applicable IAW OPNAVINST 3750.6. For further guidance see Chapter 3.

CHAPTER 2

PHYSIOLOGICAL EVENT

RAPID RESPONSE TEAM

(PERRT)

PHYSIOLOGICAL EVENT INVESTIGATIONS AND REPORTING

PHYSIOLOGICAL EVENT RAPID RESPONSE TEAM (PERRT)

PURPOSE

In January 2018, Commander, Naval Air Forces, (CNAF), Commander, Naval Safety Center (COMNAVSAFECEN) and the Physiological Episode Action Team (PEAT) instituted the requirement for each Naval Air Station, Marine Corps Air Station, or Joint Reserve Base (JRB) with Liquid Oxygen (LOX) or Onboard Oxygen Generating System (OBOGS) equipped aircraft to stand up a Physiological Event Rapid Response Team (PERRT).

SCOPE

Each PERRT must include the following:

- Aeromedical Safety Officer (AMSO) – Will serve as the Lead for the PERRT
- Squadron ASO
- Flight Surgeon (FS) or Aerospace Medicine Physician Assistant (APA)
- Technical representative (NATEC, Boeing, or Northrup Grumman FSR)

NOTE:
Navy Wing or MAG ASO – Since Oct 2017, it has become apparent that the workload for the AMSO on many of our bases can become overwhelming as multiple PEs can and do happen in any given week. Observationally, at sites where they have the most efficient and effective system, the Navy Wing or MAG ASO serves as an additional primary PERRT member to assist the AMSO in data collection, interviews with the squadron ASO, or initial maintenance interaction.

The PERRT will be led by the Navy Wing or USMC Marine Aircraft Group (MAG) AMSO, and have the authority to operate in support of an Aviation Mishap Board (AMB) (or hazard investigation) IAW OPNAVINST 3750.6.

Wings and/or MAGs are required to create a local PHYSEP/PE-specific standard operating procedure (SOP) (to include local, detachment, and deployment operations), using this document as a framework, in order to minimize PE response times and efficiently complete all investigation and reporting requirements. These SOPs should include the requirement to involve the available technical representatives (Naval Air Technical Data and Engineering Service Command [NATEC], Boeing or Northrup Grumman Field Service Representative [FSR]) in the evidence collection and PE analysis phases.

NOTE:
There are conditions in which the complete PERRT is not readily available to investigate and report on PEs. These conditions include, but are not limited to, air stations/JRBs, detachments,

and deployments that do not have access to key PERRT members. When such cases exist, PE SOP guidance shall address the deficits to the PERRT and have standing procedures to support all PE investigation and reporting requirements using the next higher echelon command, and any/all available on-site support required to begin PE reporting and investigation efforts.

When any PERRT member is notified by a squadron of a suspected PE, the team shall assemble as soon as practical and begin the preliminary investigation and data collection efforts outlined in Chapter 3.

Regardless of whether a determination has been made to categorize the event as a PHYSEP, PE, or undetermined, the first priority is to treat the symptomatic aircrew. Once any aircrew urgent medical needs are satisfied, proceed with current Clinical Practice Guideline (CPG) protocols. Do not delay any clinically indicated treatment.

The PERRT has external resources available to assist in PE investigation, documentation, and reporting. The team is encouraged to use the following resources for assistance as applicable: Bureau of Medicine and Surgery (BUMED) Aeromedical Action Team (AMAT), NAVSAFECEN Aeromedical Division personnel, as well as the Aircrew Oxygen Systems (AOS) and Environmental Control Systems (ECS) Fleet Support Teams (FSTs). These experts are available to discuss suspected or known aircraft malfunctions and aircrew symptomology to assist in PE determination, and will provide guidance for any additional information/data that may be required in the PE investigation process.

The PERRT and/or AMB will determine if the episode warrants the full PE protocol or is to be reported as a standard squadron submitted PHYSEP or Safety Investigation Report (SIR) in WESS/RMI.

If the formal PE protocol is warranted, the following are required for submission:

- Initial notification via email (standard 24 hours or expedited 4-hour notification if special conditions are met as discussed in Chapter 3)
- PE Part A, B, C, and D Evidence Data Sheets (EDS)
- PHYSEP or SIR in WESS/RMI
- PERRT Final Summary Report

NOTE:

If at any point during the PE investigative process, the PERRT determines that one or both conditions required to report a PE is no longer valid, the PE may be downgraded and reported via a PHYSEP or HAZREP IAW OPNAVINST 3750.6.

- Submit an update to the PE initial notification email including justification for the downgrade
- Submit all evidence to NAVSAFECEN for NAE PE data analyses

ROLES AND RESPONSIBILITIES

To further clarify the above process, the specific roles and responsibilities of PERRT members are delineated below.

AMSO

As the PERRT Lead, the AMSO is the primary point of contact to NAVSAFECEN and NAE leadership for the investigation and reporting of their respective PEs. The AMSO must liaise with the affected aircrew, FS or APA, squadron/Wing/MAG ASO, maintenance personnel, local technical representatives, PR/FE personnel, and command leadership.

Upon notification of a suspected PE, notify all other members of the PERRT, ideally within 1 hour, in order to begin the investigation and data collection efforts and determine if the flight/ground event meets all conditions required to be deemed a PE.

NOTE:
Technical representatives work a standard day and are not automatically provided overtime for this effort. If the event occurs after hours or on the weekend, technical representatives will receive notification and must engage as soon as possible based on standard labor rules.

If possible, participate in the involved aircrew interview along-side the ASO to ensure thorough and consistent data collection (PE Interview Template provided in Appendix 4). ***Ensure that all involved aircrew (not just symptomatic aircrew) complete a PE Part A EDS.***

Ensure the squadron maintenance department is in communication with the local technical representative and/or AOS & ECS FSTs, and make certain the PE Part B EDS is completed. Ensure the technical representative provides input regarding the PE Part B EDS and submits any analysis completed on Memory Unit (MU) files, Slam Stick files, or Garmin Watch files.

IAW OPNAVINST 3750.6, the AMSO must act as an advisor to the ASO on all ALSS issues, including identifying discrepancies and potential causal factors.

Schedule and conduct a complete ALSS evaluation alongside squadron Aircrew Survival Equipmentman (PR) / Flight Equipment Technician (FE) personnel. Document findings and results on the PE Part D EDS. For all ALSS that is not optimally fit, ensure close-up photo documentation. Consult with the PR/FE and/or FS or APA as needed to assist in determining if the ALSS ensemble could be contributory to the PE. Document all plans to rectify ALSS deficiencies as soon as practical, and any follow-up evaluations that may be required to achieve the optimum ALSS fit.

NOTE:
If a PE occurs on deployment, detachment, or under any other circumstances that prevents the

AMSO's participation in the ALSS evaluation, local SOP must provide direction to the squadron PR/FE on how to conduct and document the ALSS evaluation on the PE Part D EDS and how to submit it to the PERRT Lead.

Gather all additional data sources collected by the team or ancillary advisors to assist in the PERRT's final PE determination and submit these to NAVSAFECEN, along with all PE EDSs as supporting evidence. Examples of supporting documentation and evidence:

PE Part A EDS

- Individually completed by each aircrew in aircraft, regardless of symptoms
- Interview report
- AMSO or ASO observations from interview

PE Part B EDS

- MU data files
- Slam Stick reports and/or analysis by Technical Representative
- Garmin watch file
- PMA-265 PE Quick Look
- Technical Representative Summary

PE Part C EDS

- Armed Forces Health Longitudinal Technology Application (AHLTA) or Emergency Room (ER) notes
- 72-hour history
- Working differential diagnosis and findings when multiple diagnoses are suspected and/or low confidence of interim diagnosis (can be written up as a separate document if required)
- Lab and/or radiology reports
- Dive Medical Officer (DMO) or civilian chamber physician notes
- Follow up vitals and notes (for multiple treatments or longer term care)
- MACE-2 Report

PE Part D EDS

- Include observations and/or recommendations from Aviation Life Support Systems (ALSS) fitting
- Photographs of each component of ALSS that is not "optimally" fit and/or integrated that impacts the final overall ensemble. Provide a final ensemble photograph

PERRT Final Summary Report (used to assist ASO in final PHYSEP or SIR)

- Final overall findings and summary of event with, if available, identified causal factor(s)
- Include justification for findings and causal factor(s)

Prior to submission, perform a quality assurance (QA) review on all PE EDSs to ensure accuracy, thoroughness, and consistency, and submit them IAW timeline requirements per Chapter 3 of this document. Ensure team members understand that all EDSs are sent to the PERRT Lead and not directly to NAVSAFECEN.

Communicate with PERRT members at the conclusion of the investigation to write the PERRT Final Summary Report and assist the squadron ASO in developing Causal Factors and Recommendations for the final SIR or PHYSEP. Ensure the PERRT Final Summary Report is submitted to NAVSAFECEN Code 14 Aeromedical Division for endorsement.

Required Deliverables of AMSO:

- Assist, when able, in interview of involved aircrew
- Complete PE Part D EDS with local PR/FE – provide photos as applicable
- Collect and QA all PE Part A-D EDS and submit to NAVSAFECEN
- Coordinate final PERRT review and write PERRT Final Summary Report; submit to NAVSAFECEN

SQUADRON ASO

Interview each involved aircrew (with PERRT Lead, if available) and obtain a separate and independent PE Part A EDS from each involved individual following the PE. The squadron ASO must review the EDS with the aircrew in order to ensure thorough and consistent data collection. A sample PE Interview Template is provided in Appendix 4.

Provide completed PE Part A EDS(s) to the PERRT Lead for final QA and submission to NAVSAFECEN.

Within 24 hours of PE determination, notify via email, NAE leadership along with NAVSAFECEN Aeromedical Division using the respective platform-specific PE email notification templates and distribution addresses found in Appendices 1-3 of this document.

NOTE:
If any of the following three conditions are met: Impaired landing, event involving a foreign national, or chamber treatment conducted - then an initial notification must be done within 4 hours of PERRT PE determination.

Assist PERRT Lead in gathering the PERRT to discuss all data collected and create a final report that highlights your findings and human factors. Submit final SIR or PHYSEP via WESS/RMI IAW OPNAVINST 3750.6 within 30 calendar days of event determination. Ensure the SIR or PHYSEP narratives complement the narratives captured on PE Part A and C EDS. Ensure that Causal Factor(s) and Recommendation(s) analysis by the PERRT are reflected in the final SIR or PHYSEP report in WESS/RMI. Both the SIR/HAZREP and PERRT Final Summary Report are reviewed in detail by Code 14 staff during the final endorsement process. In the event that the accepted causal factors identified in the two documents do not match, expect the SIR/HAZREP

to be returned to the squadron ASO for further clarification.

Assist in the generation of the PERRT Final Summary Report.

Upon final endorsement of the event SIR or PHYSEP, debrief results to the squadron and aircrew involved.

Deliverables for ASO:

- Conduct aircrew interview(s) and submit supporting documentation to PERRT Lead
- Complete PE Part A EDS and submit to PERRT Lead
- Draft/Submit PHYSEP or SIR in WESS/RMI
- Participate in final PERRT review and assist in draft of PERRT Final Summary Report

SQUADRON/DUTY FS or APA

Regardless of whether a determination has been made to categorize the event as a PHYSEP, PE, or undetermined, the first priority is to treat the symptomatic aircrew. Once any aircrew urgent medical needs are satisfied, proceed with current Clinical Practice Guideline (CPG) protocols. Do not delay any clinically indicated treatment.

Conduct a complete medical evaluation of all involved aircrew using the current PE CPG found using the URLs below:

https://intelshare.intelink.gov/sites/nsc/Pages/aeromedical.aspx (Common Access Card [CAC]-enabled)

Document findings and results on the PE Part C EDS.

NOTE:
This is not a standard physical examination. This is part of a safety investigation with the purpose of identifying, given the available evidence and symptoms, what occurred medically to the aircrew/maintainer that resulted in the PE. Detailed histories and medical diagnostics are critical to the overall success of the PE investigative effort. NAVSAFECEN Code 14 staff and Senior Regional FSs are additional resources to assist with the medical investigation and data collection effort post-PE.

A review of the PE Part A EDS and Slam Stick data (if available) could assist the FS in completing the Part C EDS. Where provided, non-invasive monitoring with the Masimo RAD-57 for SpO2, Carbon Monoxide (CO), and Methemoglobin (MetHb) shall be performed as soon as possible (ideally within 30 min after landing), and at the end of the evaluation, or if initial reading is abnormal. Locations not equipped with a RAD-57 shall perform venipuncture to obtain Carboxyhemoglobin levels on ***all involved aircrew*** (regardless of symptomology) as soon as possible. Logistics to ensure availability to aircrew within this timeframe shall be addressed by local SOP.

NOTE:
Consultation for treatment considerations can be obtained via NAMI's 24/7 Decompression Illness (DCI) hotline, 850-449-4629.

Include all amplifying data in the PE Part C EDS submission: lab and/or radiological results (actual report), 72-hour history, AHLTA notes, Dive Medical Officer (DMO)/chamber treatment notes, civilian Emergency Room (ER) documentation, specialist notes, MACE-2 report, follow on notes/vitals if complicated patient, etc.

Provide final PE Part C EDS and amplifying evidence to the PERRT Lead for final review, QA, and submission to the NAVSAFECEN.

Assist in generation of the medical portion of the PERRT Final Summary Report.

Deliverables for the FS/APA:

- PE Part C EDS
- All associated notes from AHLTA, DMO, ER, specialists, etc.
- Lab/radiological reports
- Follow up notes if complicated patient requires additional treatment or specialty referral
- Participate in final PERRT review and assist in draft of PERRT Final Summary Report

LOCAL TECHNICAL REPRESENTATIVE

Each base has a variety of different technical representatives available for PERRT membership. NATEC and Boeing or Northrup Grumman FSRs are all available for team membership and maintenance-related support. Local SOP will determine how each of these valuable assets are used on the PERRT.

Ensure the PE Part B EDS is completed by maintainers conducting the required testing and inspections on the aircraft and ensure that it is submitted per the guidelines in Chapter 3. Attach a summary document of the test and inspection results containing detailed narrative of abnormal findings and corrective actions taken to return the aircraft to a Safe-for-Flight status. Attach additional MU files, Slam Stick/Garmin watch files, and F/A-18 Automated Maintenance Environment (FAME) analysis conducted. ***The key to this summary is to provide insight as to whether or not any abnormal test or inspection results could be contributory to an adverse cockpit environment, and directly correlated to the symptoms experienced by the aircrew.*** This is critical to assisting the FS/APA in correlating aircrew symptoms to abnormal aircraft and/or aircrew systems performance.

Liaise, as necessary, with the applicable subsystem FSTs to facilitate recommended engineering investigation (EI) requirements per the guidance provided on the PE Part B EDS.

Deliverables for Maintenance/Technical Representative:

- PE Part B EDS submission to PERRT Lead

- Gather and submit all MU files, FAME reports, and Slam Stick/Garmin watch files
- Submit all findings or analysis conducted to PERRT Lead
- Participate in final PERRT review and assist in draft of PERRT Final Summary Report.

OPTIONAL ANCILLARY TEAM MEMBERS

FSTs/In-service Support Centers (ISSC)
- Aviation Oxygen Systems (AOS)
- Environmental Control Systems (ECS)

Medical
- NAVSAFECEN Aeromedical Division (Code 14)
- Senior Regional FS (recommended for patients with complications)
- TYCOM Surgeons (recommended for patients with complications)
- Naval Aerospace Medicine Institute (NAMI) Aerospace Medicine Specialists/Consultants
- NAMI DMO

Squadron Aviation Maintenance Administrationman (AZs) – Slam Stick, MU and FAME data

Navy Wing/MAG Maintenance Leadership

NAVAIR
- 4.6 – Human Systems Engineering
- Naval Air Warfare Center Training Systems Division (NAWCTSD) Orlando – Data Scientist

TMS Program Management Offices

CHAPTER 3

REPORTING TIMELINES,

NOTIFICATIONS,

AND

DELIVERABLES

PHYSIOLOGICAL EVENT INVESTIGATIONS AND REPORTING

REPORTING TIMELINES, NOTIFICATIONS, AND DELIVERABLES

SCOPE

PE initial notification is conducted via email. Initial Notification (IN) using the NAVSAFECEN's WESS/RMI is not required for PEs that result in a Class D mishap or PHYSEP. However, PEs that result in a Class A-C mishap still require both the PE initial email notification, as well as the IN in WESS/RMI IAW OPNAVINST 3750.6. Commanding Officers shall send a PE initial notification email within 24 hours for a suspected PE. ***Timeline for reporting is based on PE determination by the PERRT. The 24 hour clock begins when the PERRT determines that a PE has occurred.***

NOTE:
For any suspected PE which involves the following conditions, an initial email notification will be required ***WITHIN 4 HOURS***

- When an aircrew member is treated in a hyperbaric chamber
- When there was an impaired landing*
- When there is a Foreign National aircrew member involved

*An impaired landing is defined as a landing in which the pilot at the controls recognizes or demonstrates diminished mental and/or physical capability to safely recover the aircraft during the final phase of flight as the result of symptoms associated with the PE.

Initial email notifications are platform specific and will contain the mandatory reporting requirements listed in the PE initial notification email templates found in Appendices 1-3.

F-35 SPECIFIC REQUIREMENTS

Within 24 hours, PE initial reporting should include an Action Request (AR) to the F-35 Operations Center at Fort Worth, Texas. ARs are submitted via the Customer Relationship Management (CRM) application of the Autonomic Logistics Information System (ALIS). This action will notify the Joint Program Office (JPO) PE action team. For questions regarding ARs or the CRM application, contact the F-35 Operations Center:

Email: jsf-algs-ops-center.fcaero@lmco.com

Telephone: (888) 4F-35-OPS (433-5677)

USMC SPECIFIC REQUIREMENTS

USMC squadrons/units will continue to use the respective Marine Aircraft Wing (MAW) Flash

Report narrative/summary for the PE initial notification email. At a minimum, the Flash Report narrative should include the critical Who, What, When, Where and Why (5 Ws). PE initial report email will be sent after the Flash Report is submitted and shall include MAG and MAW leadership as addressees, in addition to the distribution lists outlined in Appendices 1-3.

REPORTING TIMELINES

All reporting timelines are based on PERRT PE determination.

- Initial Notification - 24 hours or 4 hours for special circumstances already described (ASO to complete via chain of command)
- PE Part A EDS - 48 hours (24 hours to complete the EDS and an additional 24 hours for PERRT Lead to QA and submit)
- PE Part B, C, & D EDS - 7 calendar days (Allows for data collection and QA)
- HAZREP/SIR (as required) - 30 calendar days
- PERRT Final Summary Report - 30 calendar days

PE CLASSIFICATION STATUS – DOWNGRADED EVENTS

If at any point during the PE investigative process, the PERRT determines that one or both conditions required to report a PE is no longer valid, the PE may be downgraded and reported via a PHYSEP, HAZREP, or General Mishap SIR IAW OPNAVINST 3750.6.

- Submit an update to the PE initial notification email with justification for the downgrade
- Submit all evidence to NAVSAFECEN for NAE PE data analyses

TIMELINE EXTENSION REQUESTS

If the above timelines are not met, request an extension from NAVSAFECEN Code 14 Aeromedical Division NAVSAFECEN_CODE14_AEROMED@navy.mil. Describe the specific reason(s) for the request; "administrative delay," or "investigative delay" is not enough. In some cases, a deadline extension may be appropriate.

DELIVERABLES

PE EDSs are available on the NAVSAFECEN Aeromedical websites by using the URLs below:

https://intelshare.intelink.gov/sites/nsc/Pages/aeromedical.aspx (CAC-enabled)

EDSs must be downloaded directly from the website(s) upon each occurrence of a PE to ensure the most current version of each EDS is used.

PE EDSs must be completed electronically to facilitate efficient data collection and analysis. If poor connectivity prevents submission via Adobe PDF, the SUBMIT function on the bottom of

each EDS will generate an .XML file that is a smaller file size and easier to transmit via email.

PE PART A

Multiple T/M/S-specific program offices have developed an aircraft-specific PE Part A EDS. These EDSs require completion by all involved aircrew following a PE flight and/or ground event to capture as much detail as possible. The name listed on the Part A ***MUST*** be that of the involved aircrew and not that of the ASO, Safety Officer, AMSO or other PERRT members. In dual seat aircraft PEs, the narrative should not be the same as each aircrew has a different perspective as to what happened. EDSs with identical narratives will be returned.

PE PART B

The PE Part B EDS is also an aircraft-specific investigative tool and must be completed by squadron maintenance personnel in consultation with technical representatives (NATEC and/or FSR) and Aircrew Oxygen System FST. Environmental Control Systems (ECS) FST may also be used for questions related to accurate and thorough completion of the required testing and troubleshooting or requests for MU/Slam Stick/Garmin watch file analysis. In addition to the information contained in the PE Part B EDS, there should also be a summary document submitted that highlights the findings on the PE Part B EDS that maintenance experts conclude may have contributed to the adverse cockpit conditions that resulted in abnormal aircrew symptomology.

Per PE Part B EDS, it is required that squadron maintenance or a technical representative contact the AOS Team after each PE to determine which AOS components need to be examined through the EI process.

PE PART C

The PE Part C EDS is a human-focused investigative tool common across all T/M/S. The FS or APA must complete the PE Part C EDS using the most current PE CPG and then submit, along with all supporting documentation, to the PERRT Lead for final QA and submission to NAVSAFECEN.

PE PART D

All PE-involved aircrew shall be made available, as soon as practical, after the event in order to facilitate a thorough ALSS evaluation. These evaluations are critical to examine the entire ALSS ensemble and determine if any single component, or the integration of sub-assemblies, could be contributory to the aircrew's PE symptoms.

The ALSS evaluation shall involve the squadron PR/FE personnel and the PERRT Lead; and include a coordinated plan to address any identified discrepancies documented in the PE Part D EDS submission.

In the event a PE occurs while a squadron is on detachment or deployment where the PERRT Lead is not readily available, then the PE Part D EDS shall be completed by the squadron PR/FE personnel and submitted to the PERRT Lead for final review and submission to the NAVSAFECEN.

NAVSAFECEN Aeromedical Division will conduct trend analyses on discrepancies noted on the PE Part D EDS and provide periodic updates to PMA202 (Aircrew Systems) and the Fleet Air Introduction Liaison of Survival Aircrew Flight Equipment (FAILSAFE) Team Lead.

SLAM STICK OPERATION

F/A-18 and EA-18G squadrons or units must use Slam Sticks during flight and download the data after every flight. With the introduction of FAME 17.3, crews are required to produce the Slam Stick report to take note of the maximum pressure rate of change. The FAME System will alert aircrew if that pressure rate of change exceeds +/- 0.6 psi/sec, highlighting a potential for increased risk of PE and delayed symptoms. Aircrew should seek medical evaluation, if any PE related symptoms present post-flight. Additionally, Slam Stick data is automatically sent through FAME to the PMA-265 PE Integrated Product Team (IPT) for analysis and trending over time.

When the Slam Stick and Maintenance Card/MU are downloaded to the Portable Electronic Maintenance Aid (PEMA) at the same time, the two files are named identically.

With two identical file names, the Flight Summary Tool in FAME can plot cabin pressure in feet from the Slam Stick with aircraft altitude from the Maintenance Card/MU file, as well as display the expected range of cabin altitude throughout the flight.

The aircrew must ensure the Slam Stick is recording (light flashing) prior to flight. If not, aircrew must press the button momentarily to start recording.

The aircrew should carry the Slam Stick in the flight suit shoulder pocket with the button/light facing towards the body to minimize inadvertent deactivation.

Maintenance personnel must download Slam Stick data when Maintenance Card/MU is downloaded. If download does not occur, Slam Stick files may be lost or associated with the wrong flight. Slam Stick should “follow” Maintenance Card/MU. During cross-country flights, the same Slam Stick can be used for all flights prior to Maintenance Card/MU download.

Ideally, the Slam Stick will be turned off between flights to preserve battery life. Aircrew should consider taking an extra Slam Stick, but only use if the first Slam Stick fails.

If a PE is experienced during the flight evolution, the Maintenance Card/MU file name should be noted. Maintenance Card/MU file name is available in multiple locations during download process.

Example: B166855D20170814T1842.AAD:

BUNO = 166855
Date of download= 8/14/2017
Local PEMA time at download= 18:42

Complete Slam Stick Operating Guides and configuration checklists can be found on the NAVSAFECEN CAC-enabled Aeromedical web site using the URL below:
https://intelshare.intelink.gov/sites/nsc/Aviation/Forms/Slam%20Stick%20Resources.aspx

CHAPTER 4

PERRT FINAL

SUMMARY REPORT

AND

SIR/HAZREP TIMELINES

PHYSIOLOGICAL EVENT INVESTIGATIONS AND REPORTING

PERRT FINAL SUMMARY REPORT AND SIR/HAZREP TIMELINES

The final phase of PE investigation and reporting involves a comprehensive review of all available evidence collected and submitted by the PERRT. The HAZREP or SIR (as applicable), along with the PERRT Final Summary Report must be submitted to NAVSAFECEN within 30 calendar days following PE determination. The HAZREP or SIR must be submitted via WESS/RMI and the PERRT Final Summary Report must be submitted to NAVSAFECEN Aeromedical Division. The PERRT Final Summary Report will only be released to the involved aircrew of the PE once endorsed by NAVSAFECEN.

These Final Summary Reports, along with the aircraft platform Program Office engineering investigation documentation are used as reference material by the Naval Safety Center analysts to support the Final Endorsement process within WESS/RMI.

The PERRT Final Summary Report will be drafted by the PERRT Lead, including the key findings from all evidence collected, and will include both conclusions reached and any potential recommendations to help prevent future PEs from occurring. For a PE that involves multiple aircrew, only one Final Summary Report is required, but any individual aircrew medical information must be de-identified. A sample PERRT Final Summary Report can be found in Appendix 6.

For PEs that occur to aircrew who are forward deployed, the PERRT Lead remains the conduit and primary POC for PE EDS submission and PERRT Final Summary Report generation.

NAVSAFECEN's Aeromedical Division is responsible for maintaining the PE EDS Report Card for each T/M/S impacted by PEs. This report card serves to ensure PE EDS reporting compliance and will be available upon request to PERRT Leads.

APPENDICES

APPENDIX 1

F/A-18 A-F / EA-18G PE INITIAL EMAIL REPORTING EXAMPLE

Listed below are the instructions for submitting the initial PE notification email. Use the format included below as the template for the PE notification email.

EMAIL SUBMISSION REQUIREMENT: ***The PE event initial reporting requirement will be submitted via email within 24 hours of a routine PE and within 4 hours of any PE involving Hyperbaric Treatment, Impaired Landing, or a Foreign National.*** The email requirement will be submitted prior to, and in addition to, the submission of hazard/mishap reporting via WESS/RMI and PE Part A, B, C, and D EDSs. Email shall be sent by squadron/unit Commanding Officer or Detachment OIC and will be distributed to Navy/Marine Corps aviation leadership, but Commanding Officers/Detachment OICs should include all units in their operational chain of command as well.

EMAIL ADDRESSEE: Initial PE notification email will be sent to:
hornet_pe_notification.gm.fct@navy.mil

EMAIL TEMPLATE: A standardized format for the PE notification email is included below. Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission. Follow up notification may be required with additional data depending on symptom development or resolution. Complete the template and then cut and paste into PE notification email.

Reporting requirements are broken down into four Sections:

1. ***UNIT/*LOCATION/*TMS/*BUNO/*DTG**
Example: VMFA-XXX/MCAS Beaufort/F/A-18C/165XXX/011630Z JAN11
VFA-XXX/Deployed CVN-XX/F/A-18F/166XXX/011630Z JAN11

2. ***NARRATIVE**: Provide brief summary of PE event (5 Ws) to include if hyperbaric chamber treatment was utilized and/or if a foreign aircrew was involved (as required).

Example Narrative:

SUMMARY: F/A-18F received AV AIR DEGD caution light immediately following launch from NAS Fallon, accompanied by cabin over pressurization fluctuations. Approximately 4 min after takeoff, passing through 12k FT, pressure cycled between 12k-5k FT Mean Sea Level (MSL) within 1 minute multiple times. Weapons System Officer (WSO) experienced lack of mental acuity and delayed responses to radio calls almost immediately following the surges, the pilot was asymptomatic until after landing Emergency procedures were initiated immediately, requiring an RTB at 10k FT MSL, neither aircrew noticed any performance improvement or degradation after initiating emergency oxygen. The WSO's emergency oxygen was depleted 30-sec prior to landing; the pilot's emergency oxygen was depleted during rollout from

landing (approx. 1 min after WSO depletion). The pilot first noticed decreased cognitive ability approximately 20 min after landing and was administered supplemental oxygen. Both aircrew are en route to flight surgeon for evaluation/treatment. Slam Stick was used and indicated cabin pressure cycled between 12k-5k FT MSL during flight. The aircraft is in a down status during maintenance investigation.

3. **AIRCREW DATA/STATUS**

Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission.

-*Current Aircrew Status to include Medical Treatment/Diagnosis (treatment on landing / transported to medical)
-*Aircrew Symptoms (For All Aircrew)
-*Hyperbaric Chamber Treatment and Dive Table Used (if required)
-*Impairment during Landing
-*Foreign National Aircrew Involved (do not include PII info in email)
-Aircrew Experience and Flight Hours
-Any Previous Known PE Events for Aircrew (do not include PII info in email)

Example:
AIRCREW DATA/STATUS
-Current Aircrew Status to include Medical Treatment/Diagnosis: *Pilot administered O2 by FS after landing and is symptom free but grounded until Monday, 8 Jan 2018 for re-evaluation.*
-Aircrew Symptoms: *Pilot noticed pressure needle fluctuations in flight, and reported minor symptoms, including lightheadedness, and being "behind the jet". WSO reported no symptoms.*
-Hyperbaric Chamber Treatment and Dive Table Used: *Chamber was not used.*
-Impairment during Landing: *Pilot was slightly impaired on landing, and reported missing several checklist items through shutdown.*
-Foreign National Aircrew Involved: *N/A*
-Aircrew Experience and Flight Hours: *O-2 FRS Student Pilot 400 hours*
-Any Previous Known PE Events for Aircrew: *None*

4. **AIRCRAFT DATA / COCKPIT INDICATIONS AND NATOPS PROCEDURES**

Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission.

-*Aircraft Side Number and Bureau Number
-*Initial Indications in Cockpit
-*NATOPS Procedures Executed (If Yes, What Procedures)
-*Slam Stick Usage and Data Attached
-*Flight Profile Type/Flight Regime (e.g., Basic Fighter Maneuvers (BFM)/Straight and Level, Decelerating)
-*Current Disposition/Status of Aircraft/Incorporation of Airframe Bulletin (AFB) 821/822 if applicable
-*Previous Aircraft PE History
-Emergency O2 Utilized/Depleted

-Cautions Set (OBOGS or any other)
-ECS AAD File Data Attached
-General Weather at Time/Location of PE (e.g., Clear, in Clouds, Precip)

Example:
AIRCRAFT DATA / COCKPIT INDICATIONS AND NATOPS PROCEDURES
-Aircraft Side Number and Bureau Number: *165412*
-Initial Indications in Cockpit: *Approximately 20 minutes after takeoff, the aircraft experienced an AV AIR HOT caution.*
-NATOPS Procedures Executed: *The Aircrew were at 15K MSL at the time of the caution, and executed emergency procedures. After descent below 10k, the ECS mode switch was cycled to MAN then to OFF/RAM per the procedure. At this time, the pressure fluctuated 3700'. The cabin pressure stabilized at ambient pressure and the cabin pressure switch was placed to RAM/DUMP per the procedure.*
-Slam Stick Usage: *Slam stick was used, and details are pending.*
-Flight Profile Type/Flight Regime: *Straight and Level*
-Current Disposition/Status of Aircraft: *The aircraft is in a down status during maintenance investigation. AFB 821 has been incorporated.*
-Previous Aircraft PE History: *Pending*
-Emergency O2 Utilized/Depleted: *Both crew pulled the green ring for emergency O2*
-When Was Emergency O2 Depleted: *N/A*
-Cautions Set (OBOGS or any other): *AV AIR HOT*
-ECS AAD File Data Attached: *Pending*
-General Weather at Time/Location of PE: *Weather was marginal, in and out clouds during descent with < 1000/3.*

APPENDIX 2

T-45 PE INITIAL EMAIL REPORTING EXAMPLE

Listed below are the instructions for submitting the initial PE notification email. Use the format included below as the template for the PE notification email.

EMAIL SUBMISSION REQUIREMENT: ***The PE event initial reporting requirement will be submitted via email within 24 hours of a routine PE and within 4 hours of any PE involving Hyperbaric Treatment, Impaired Landing, or a Foreign National.*** The email requirement will be submitted prior to and in addition to the submission of hazard/mishap reporting via WESS/RMI and Part A, B, C, and D PE EDSs. Email shall be sent by squadron/unit Commanding Officer or Detachment OIC and will be distributed to Navy/Marine Corps aviation leadership, but Commanding Officers/Detachment OICs should include all units in their operational chain of command as well.

EMAIL ADDRESSEE: Initial PE notification email will be sent to:
t-45_pe_notification@navy.mil

EMAIL TEMPLATE: A standardized format for the PE notification email is included below. Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission. Follow up notification may be required with additional data depending on symptom development or resolution. Complete the template and then cut and paste into PE notification email.

Reporting requirements are broken down into four Sections:

1. ***UNIT/*LOCATION/*TMS/*BUNO/*DTG**
Example: VT-XX TW2/NAS Kingsville/T-45/165XXX/011630Z JAN11

2. ***NARRATIVE**: Provide brief summary of PE event (5 W's) to include if hyperbaric chamber treatment was utilized and/or if foreign aircrew was involved (as required).

Example Narrative:

SUMMARY: Initial report of T-45 decompression event during BFM at NAS Kingsville, TX. Flight departed KNQI at approximately 1443L this afternoon for the Kings1C MOA on a SEM Lead flight. Approximately 35-40 minutes into the flight and between 18,000-19,000 FT MSL, in a high alpha regime (18-19 units), aircraft lost cabin pressure with an associated CABIN ALT light. Pilot (IP) descended approximately 4,000 feet and proceeded to turn ECS flow from norm to off, waited ten seconds, and then selected ECS back to norm. CABIN ALT light extinguished momentarily, then illuminated again. Pilot attempted to cycle the ECS three more times and was successful on the fourth attempt. Aircraft maintained pressure schedule for the rest of the flight. Pilot joined on wingman and was led back for an uneventful full stop, and did not report an

impaired landing. At the time of the initial decompression, the pilot experienced a headache which persisted after landing. Post flight, pilot was examined by the FS and treated with 100% oxygen for two hours then released with no other symptoms, and is grounded for 24 hours. FS assessment is low risk to pilot, hyperbaric treatment will not be required, and pilot has been directed to follow up with FS in the morning. Aircraft downed for maintenance troubleshooting.

3. **AIRCREW DATA/STATUS**

Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission.

-*Current Aircrew Status to include Medical Treatment/Diagnosis (treatment on landing / transported to medical)
-*Aircrew Symptoms (For All Aircrew)
-*Hyperbaric Chamber Treatment and Dive Table Used (if required)
-*Impairment during Landing
-*Foreign National Aircrew Involved (do not include PII info in email)
-Aircrew Experience and Flight Hours
-Any Previous Known PE Events for Aircrew (do not include PII info in email)

Example:
AIRCREW DATA/STATUS
-Current Aircrew Status to include Medical Treatment/Diagnosis: *Pilot was examined by the FS and treated with 100% oxygen for two hours then released with no other symptoms, and is grounded for 24 hours. FS assessment is low risk to pilot, that hyperbaric treatment will not be required, and pilot has been directed to follow up with FS in the morning.*
-Aircrew Symptoms: *At the time of the initial decompression, the pilot experienced a headache which persisted after landing.*
-Hyperbaric Chamber Treatment and Dive Table Used: *Chamber not required.*
-Impairment during Landing: *Pilot did not report an impaired landing*
-Foreign National Aircrew Involved: *N/A*
-Aircrew Experience and Flight Hours: *O-4 instructor pilot 1100 hours*
-Any Previous Known PE Events for Aircrew: *None*

4. **AIRCRAFT DATA / COCKPIT INDICATIONS AND NATOPS PROCEDURES**

Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission.

-*Aircraft Side Number and Bureau Number
-*Initial Indications in Cockpit
-*NATOPS Procedures Executed (If Yes, What Procedures)
-*Flight Profile Type/Flight Regime (e.g., BFM/Straight and Level, Decelerating)
-*Current Disposition/Status of Aircraft
-*Previous Aircraft PE History
-Emergency O2 Utilized/Depleted
-When Was Emergency O2 Depleted

-Cautions/Warnings/Lights Set (OBOGS or any other)
-General Weather at Time/Location of PE (e.g., Clear, in Clouds, Precipitation)

Example:
AIRCRAFT DATA / COCKPIT INDICATIONS AND NATOPS PROCEDURES
-Aircraft Side Number and Bureau Number: *165078*
-Initial Indications in Cockpit: *Aircraft lost cabin pressure with an associated CABIN ALT light.*
-NATOPS Procedures Executed: *Pilot (IP) descended approximately 4,000 feet and proceeded to turn ECS flow from norm to off, waited ten seconds, and then selected ECS back to norm. CABIN ALT light extinguished momentarily, then illuminated again. Pilot attempted to cycle the ECS three more times and was successful on the fourth attempt. Aircraft maintained pressure schedule for the rest of the flight.*
-Flight Profile Type/Flight Regime: *BFM syllabus SEM Lead flight in a high AOA and slow-speed flight profile*
-Current Disposition/Status of Aircraft: *The aircraft is in a down status during maintenance.*
-Previous Aircraft PE History: *Pending*
-Emergency O2 Utilized/Depleted: *Both crew pulled the green ring for emergency O2*
-When Was Emergency O2 Depleted: N/A
-Cautions/Warnings/Lights Set (OBOGS or any other): *CABIN ALT light*
-General Weather at Time/Location of PE: *Clear*

APPENDIX 3

T-6, EA-6B, AV-8B, F-5, F-16, OR F-35 PE INITIAL EMAIL REPORTING EXAMPLE

Listed below are the instructions for submitting the initial PE notification email. Use the format included below as the template for the PE notification email.

EMAIL SUBMISSION REQUIREMENT: ***The PE event initial reporting requirement will be submitted via email within 24 hours of a routine PE and within 4 hours of any PE involving Hyperbaric Treatment, Impaired Landing, or a Foreign National.*** The email requirement will be submitted prior to and in addition to the submission of hazard/mishap reporting via WESS/RMI and Part A, B, C and D PE EDSs. Email shall be sent by squadron/unit Commanding Officer or Detachment OIC and will be distributed to Navy/Marine Corps aviation leadership, but Commanding Officers/Detachment OICs should include all units in their operational chain of command as well.

EMAIL ADDRESSEE: Initial PE notification email will be sent to:
SDNI_CNAP_TACAIR@NAVY.MIL

EMAIL TEMPLATE: A standardized format for the PE notification email is included below. Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission. Follow up notification may be required with additional data depending on symptom development or resolution. Complete the template and then cut and paste into PE notification email.

Reporting requirements are broken down into four Sections:

1. ***UNIT/*LOCATION/*TMS/*BUNO/*DTG**
Example: VMA-XXX/MCAS Cherry Point/AV-8B/163XXX/011630Z JAN11
VFC-111/NAS Key West/F-5/163XXX/011630Z JAN11

2. ***NARRATIVE**: Provide brief summary of PE event (5 W's) to include if hyperbaric chamber treatment was utilized and/or if a foreign aircrew was involved (as required).

Example Narrative:

SUMMARY: On takeoff from KNYL at 1915L, SHOCK72 experienced a pressurization failure while climbing to 25,000'msl, with cabin pressure rising to approximately 23,000'msl. After executing emergency procedures IAW NATOPS, the aircraft returned to KNYL for an uneventful recovery at 1945L. At approximately 2230L, ECMO2 began to experience a severe headache and was evaluated by the squadron FS and treated for a pressure related illness with O2. At approximately 0930L the next day the pilot began an evaluation for similar symptoms and was later diagnosed and treated with O2. The other two crew members are asymptomatic. All crew members have been evaluated by medical personnel and released. Aircraft is back up, a cold air line in the ECS system was found loose causing reduced airflow for pressurization.

3. **AIRCREW DATA/STATUS**

Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission.

-*Current Aircrew Status to include Medical Treatment/Diagnosis (treatment on landing / transported to medical)
-*Aircrew Symptoms (For All Aircrew)
-*Hyperbaric Chamber Treatment and Dive Table Used (if required)
-*Impairment during Landing
-*Foreign National Aircrew Involved (do not include PII info in email)
-Aircrew Experience and Flight Hours
-Any Previous Known PE Events for Aircrew (do not include PII info in email)

Example:
AIRCREW DATA/STATUS
-Current Aircrew Status to include Medical Treatment/Diagnosis: *Post flight ECMO2 began to experience a severe headache and was evaluated by the squadron FS and treated for a pressure related illness with O2. At approximately 0930L the next day the pilot began an evaluation for similar symptoms and was later diagnosed and treated with O2. The other two crew members are asymptomatic. Currently in a 72 hour down status as a precaution*
-Aircrew Symptoms: *No DCS or hypoxia symptoms were noted airborne; first notable symptoms were approximately 3 hours after landing.*
-Hyperbaric Chamber Treatment and Dive Table Used: *Chamber not required.*
-Impairment during Landing: *Pilot did not report an impaired landing*
-Foreign National Aircrew Involved: *N/A*
-Aircrew Experience and Flight Hours: *Pilot O-4 WTI 1900 hours; ECMO1 O-3 700 hours; ECMO2 O-4 1330 hours; ECMO4 O-3 WTI 1150 hours.*
-Any Previous Known PE Events for Aircrew: *None*

4. **AIRCRAFT DATA / COCKPIT INDICATIONS AND NATOPS PROCEDURES**

Items marked with an asterisk are mandatory reporting items. All other items should be included unless not available at time of submission.

-*Aircraft Side Number and Bureau Number
-*Initial Indications in Cockpit
-*NATOPS Procedures Executed (If Yes, What Procedures)
-*Flight Profile Type/Flight Regime (E.G., BFM/Straight and Level, Decelerating)
-*Current Disposition/Status of Aircraft
-*Previous Aircraft PE History
-Emergency O2 Utilized/Depleted
-When Was Emergency O2 Depleted
-Cautions/Warnings/Lights Set (OBOGS or any other)
-General Weather at Time/Location of PE (e.g., Clear, in Clouds, Precip)

Example:
AIRCRAFT DATA / COCKPIT INDICATIONS AND NATOPS PROCEDURES
-Aircraft Side Number and Bureau Number: SHOCK72 *163047*
-Initial Indications in Cockpit: *Pressurization failure while climbing to 25K MSL, with cabin pressure rising to approximately 23K MSL'*
-Flight Profile Type/Flight Regime: *Climbing flight to 25K MSL*
-Current Disposition/Status of Aircraft: *Aircraft is back up, a cold air line in the ECS system was found to have come loose causing reduced airflow for pressurization.*
-Previous Aircraft PE History: *None*
-Emergency O2 Utilized/Depleted: *LOX Aircraft*
-When Was Emergency O2 Depleted: *N/A*
-Cautions/Warnings/Lights Set (OBOGS or any other): *OBOGS DEGD*
-General Weather at Time/Location of PE: *Clear*

APPENDIX 4

PE INTERVIEW TEMPLATE

Date/Time of Interview:

Name:

Rank / Flying Experience:

Total hours/TMS Flight hours:

Previous PEs (Description, type, etc.):

24-Hour History Questions:

On a scale of 1-10, how well rested were you at the time of the flight:

How much sleep did you get the night prior?

What time did you arrive at work today?

How many meals have you eaten in the last 24 hours?

Are you currently on any type of diet? Fasting? Keto?

Generally, what did your meals consist of?

How much water have you consumed in the last day? Two days?

Have you exercised at all in the last three days?

Were there any issues on the flight yesterday or day before (if applicable)?

Was this the first event of the day for you?

If not, describe the previous events in detail? How did they go?

Event Specific Questions:

Describe your level of preparedness for this flight.

Did the brief cover Hypoxia/DCS emergencies and game plan?

Is your flight gear comfortable?

Are there any issues with your flight gear you haven't had addressed?

Are the straps on your oxygen mask "tacked" in place?

Did anything abnormal occur during your start-up procedures?

Were you parked near any other aircraft exhaust during start-up?

Were there any ECS cautions, MSPs, or Degrades on start-up or airborne?

Any OBOGS issues on deck or airborne?

Were you in a LOX aircraft?

At any point in the aircraft, did you feel like you had to breathe hard through your mask? (i.e. Did you need to forcibly exhale?)

Describe your mask usage throughout the flight. (i.e. When did you put your mask on? Did you take your mask off? For how long? What phase of flight was the mask off (level or dynamic)?)

What was the altitude profile of your flight? Be descriptive and detailed.

What was the throttle setting profile during your flight? Steady, small movements? Burner usage? Sawing throttles?

Did you note any cabin airflow surging?

If so, were they coincident with throttle movements? What altitudes?

Did you note any cabin pressure fluctuations during the flight?

If so, were they coincident with throttle movements? What altitudes?

What was the position of the ECS Mode Switch? Cabin Temp Knob? Cabin Press Switch? Defog Handle?

When did you begin to feel symptoms? (Altitude, airspeed, throttle settings, etc.)

What maneuvers/actions did you perform prior to feeling symptoms?

What were your symptoms? (tingling, numbness, cyanosis, euphoria, panic, lethargy, heart rate, etc.). Did they match your Reduced-Oxygen Breathing Device (ROBD) symptoms?

Were you thirsty, or feeling hungry in the aircraft?

Did you execute any emergency procedures?
If so, what procedures did you execute?

Did you feel oxygen paradox after initiation of Emergency Oxygen?
(i.e. Did you initially feel worse after beginning to breathe Emergency Oxygen?)

Did your symptoms alleviate once on emergency oxygen?

Did any symptoms remain after the emergency procedures?

Was your O2 bottle depleted prior to landing, and if so, did any symptoms return? At what stage of flight, did the O2 bottle run out?

What CRM was utilized, and who did you talk to during the RTB? (Base, Wingman, Lead, etc.)

From your recollection, how was your speech and communication?

Were there any noticeable changes in the speech or communication patterns of others?

Was your landing impaired? How? Arrested Landing performed?

How did you feel during your taxi back to the flight line?

Post Flight Questions:

Describe everything that happened after you egressed the aircraft to include maintenance debrief.

How long after landing did you see the FS?

Did you drink water or eat after landing and before labs were drawn?

Did your symptoms subside?

Do you have any lingering questions or concerns with respect to your PE?

APPENDIX 5

DELIVERABLES QUICK CHECKLIST

- Email notification:
  - Within 4 hrs of PE determination if:
    - - Aircrew member treated in a hyperbaric chamber
    - - Impaired landing
    - - Foreign National aircrew member was involved
  - Otherwise within 24 hrs

- PE Part A EDS – 48 hrs
  - Interview Template

- PE Part B EDS – 7 calendar days
  - NATEC/Maintenance Rep Summary
  - Slam Stick data file

- PE Part C EDS – 7 calendar days
  - AHLTA Notes
  - 72 hr. History
  - DMO Notes
  - ER Notes
  - Imaging Studies
  - Lab Results
  - MACE-2 Reports
  - Summary

- PE Part D EDS – 7 calendar days

- PHYSEP/SIR – 30 calendar days

- PERRT Final Summary Report – 30 calendar days

<u>PE CLASSIFICATION STATUS – DOWNGRADED EVENTS</u>

If at any point during the PE investigative process, the PERRT determines that one or both conditions required to report a PE is no longer valid, then the PE may be downgraded and reported via a HAZREP or General Mishap SIR IAW OPNAVINST 3750.6.

1) Submit an update to the PE Initial Email with rationale and justification for the downgrade

2) Submit all evidence collected and documented in any PE EDS to NAVSAFECEN who will still collect and retain for NAE PE data analyses.

TIMELINE EXTENSION REQUESTS

If the above timelines are not met, request an extension from NAVSAFECEN Code 14 Aeromedical Division NAVSAFECEN_CODE14_AEROMED@navy.mil . Describe the specific reason(s) for the request; "administrative delay," or "investigative delay" is not enough. In some cases, a deadline extension may be appropriate.

APPENDIX 6

SAMPLE PERRT FINAL SUMMARY REPORT

XX Month Year

From: (Air Station/Base/Wing/MAG) Physiological Event Rapid Response Team (PERRT)
To: Affected Crew (By Name)
Subj: FINAL REPORT FOR (T/M/S) PHYSIOLOGICAL EVENT #XXX, SQDN, XXMonthYear, (T/M/S), BUNO XXXXXX

Ref: (1) PE Evidence Data Sheet, Part A, Aircrew Narrative
(2) PE Evidence Data Sheet, Part B, Aircraft Maintenance Data
(3) PE Evidence Data Sheet, Part C, Aeromedical Evaluation
(4) PE Evidence Data Sheet, Part D, Aviation Life Support Systems Evaluation
(5) Other Supporting Documentation (Slam Stick Data, MU File, PMA Quick Look etc)

1. Narrative

2. Maintenance Data

3. Aeromedical

4. Discussion

5. Conclusions

6. Recommendations
Targeted towards all stakeholders (Squadron, Wing, TYCOM, PMA, BUMED etc…)

I. M. AMSO
LT MSC USN

APPENDIX 7

SUPPORTING INFORMATION

PE CLINICAL PRACTICE GUIDELINE

The PE Clinical Practice Guideline (CPG) is updated quarterly and found by using the URL below:

https://intelshare.intelink.gov/sites/nsc/Pages/aeromedical.aspx

HYPERBARIC FACILITIES

The current list of known CONUS hyperbaric facilities is found by using the URL below:

https://intelshare.intelink.gov/sites/nsc/Aviation/Hyperbaric%20Chamber%20List.pdf

RESOURCES

Aircrew Oxygen Systems FST: navair_pma202_aos_ei@navy.mil

NAVSAFECEN – Aeromedical Department (Code 14)
TEL: (757) 444-3520 Ext. 7814
EMAIL: NAVSAFECEN_CODE14_AEROMED@navy.mil

NAMI Dive Medical Officer: 24/7 Physiological Episode DCS/DCI hotline, 850-449-4629

Reporting agencies and squadrons can also access mishap and hazard reporting information via either an iPhone or Android OS application which can be found using the URLs below:

http://appstore.com/cnafcoguide (In App Store, search for CNAF)
https://play.google.com/store/apps/details?id=mil.navy.med.cnafflightsurgeon&hl=en

Included in the Aviation Module of the application is an interactive checklist for FSs that covers initial response, evaluation and reporting criteria specific to PEs.

The application is password protected and to receive login credentials, please email cnap_premishap@navy.mil from a NMCI account.

APPENDIX 8

PE / PHYSEP EXAMPLES

EXAMPLE 1

Aircraft has an OBOGS DEGD during flight, the pilot experiences symptoms in-flight that closely match those experienced during ROBD training.

Reported as a PE: Aircrew Systems Malfunction + Aircrew Symptoms

EXAMPLE 2

Pilot experiences mild headache and fatigue in flight that causes him/her to terminate the flight. The symptoms persist well after the flight. No warnings or cautions were noted during the flight event and all aircrew systems (oxygen mask, oxygen regulator, OBOGS systems) appeared to perform normally during flight.

Reported as a PHYSEP Hazard Report: No Aircraft/Aircrew Systems Malfunctions + Aircrew Symptoms

EXAMPLE 3

Pilot inadvertently selects the Cabin Pressure Dump switch in flight at FL 250. The pilot experiences immediate pain/pressure in his/her ears and sinus along with a tingling sensation in the extremities.

Reported as a PHYSEP or General Hazard Report: NO PE.

No Aircraft Malfunction (the aircraft did exactly what the pilot asked of it by dumping the cabin pressure) + Aircrew Symptoms

EXAMPLE 4

Aircraft cockpit provides multiple surges to the internal cabin pressure that, at the time of the pressure swings, produced no adverse symptoms in the aircrew. 2 days following the flight, the aircrew both experience varying degrees of pain and numbness in multiple extremities. They report to the squadron FS to discuss the symptoms and after consultation with the NAMI DMO, they agree that treatment should be provided in an attempt to resolve the aircrew's symptoms.

Reported as a PE: Aircraft Malfunction + Aircrew Symptoms