

US Swine Health Improvement Plan (US SHIP)



House of Delegates Meeting (US SHIP HOD)

August 23 – 24, 2021

Iowa Events Center

Des Moines, Iowa

Conference Proceedings

Updated to reflect changes of
HOD Meeting - Sept 1 2021

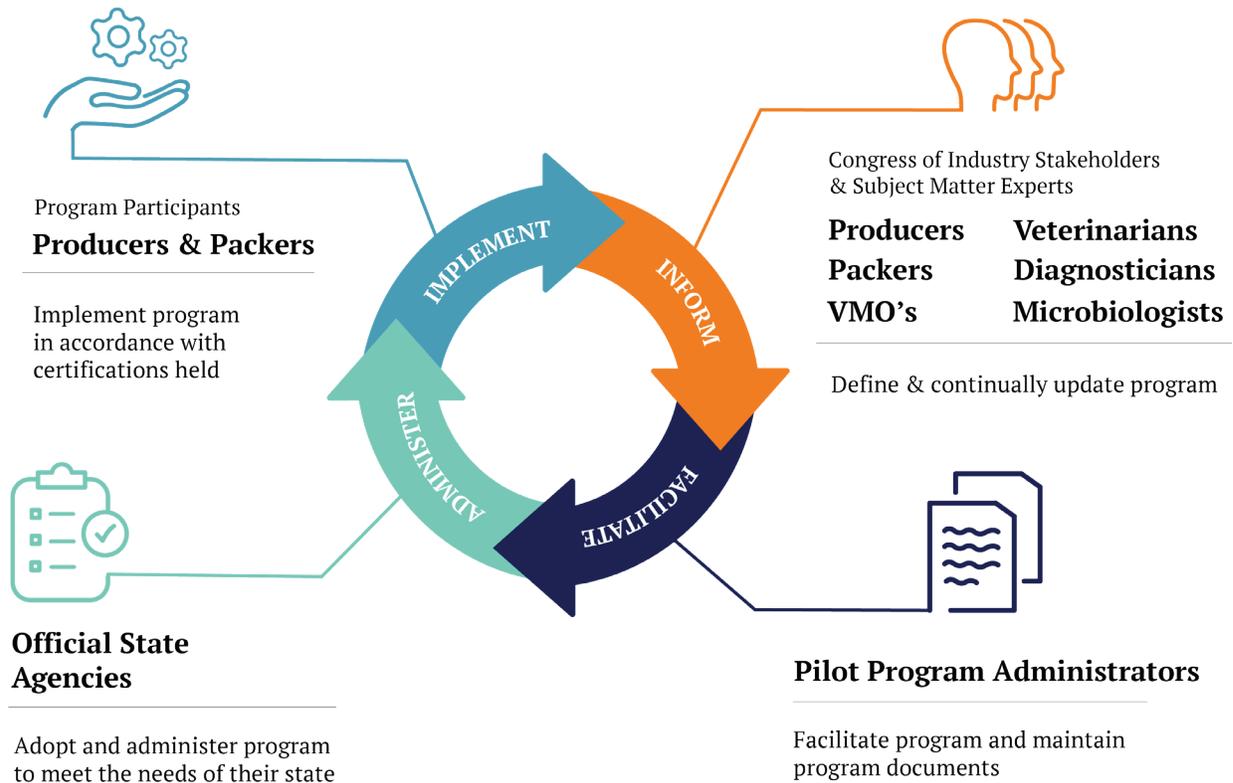


US Swine Health Improvement Plan



ASF-CSF Monitored Certification

“Piloting a proven platform for safeguarding, certifying, and bettering animal health”



Industry, State, & Federal Partnership

Pathway for improving preparedness across US Pork Industry

US SHIP will establish a **National Playbook** of technical standards centering on **Prevention and Demonstration of Freedom of Disease Outside of Control Areas**

Biosecurity, Traceability, and Disease Surveillance

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Meeting Objectives

US SHIP House of Delegates Participant,

Thank you for your interest in attending this inaugural US SHIP House of Delegates (HOD) meeting to be held on August 23-24 at the Iowa Events Center in Des Moines, IA.

Objectives of this forum of US pork industry stakeholders:

1. Introduce and orientate interested US pork industry, state, and federal partners to this US Swine Health Improvement Plan (US SHIP) pilot project.
2. Consider and finalize the initial (Year 1) program standards/requirements for conferring the ASF-CSF Monitored Certification to participating production sites and slaughter facilities.
3. Provide feedback and direction on which additional items of high relevance (related to US swine health and foreign animal disease preparedness) are of interest to be explored further by working groups in the coming year with findings and recommendations to be brought forward for subsequent consideration at the second US SHIP HOD meeting to be held in August 2022.

The US SHIP HOD is a decision-making body composed of US pork industry participants and subject matter experts that aim to represent the interests of pork industry stakeholders across each of the states that have expressed an interest in participating in this US SHIP pilot project.

Each state expressing interest has been allocated a specified number of voting delegates and the opportunity to invite two non-voting guests to attend this inaugural US SHIP HOD meeting. A formula was used to derive the number of voting delegates allocated to each state. The number of delegates includes a baseline allocation to each state, as well as an allocation proportionate to the number of breeder and feeder swine (respectively) located within each participating state.

State pork producer associations have been asked to seek volunteers to serve as voting delegates or non-voting guests in this inaugural US SHIP HOD. Each participating state's voting delegation is to be inclusive of the State Animal Health Official or their designee. State level participation in this US SHIP ASF-CSF Monitored Certification pilot project will be determined by the State Animal Health Official.

As of July 1, 2021, a total of 28 states have expressed interest, and 179 voting delegate invitations have been extended to participate in this inaugural US SHIP HOD.

US SHIP pilot project investigators, staff, and technical committees (involving the contributions of more than 90 subject matter experts/industry participants from across the US) have contributed to the development of a draft set of program standards for Year 1 of this US SHIP pilot project. These proposed program standards/requirements for certification will be brought forth for consideration, discussion, and formal vote at this US SHIP HOD meeting.

These technical committees (Sampling & Testing, Traceability, and Biosecurity) have also worked to identify several key items of high relevance that go beyond the scope of program standards to be

Meeting Objectives

proposed for Year 1 but will be discussed more in-depth at breakout sessions at the US SHIP HOD meeting. Pending feedback received at the US SHIP HOD meeting, working groups will be formed and proceed forward to further investigate the specific items deemed to be of highest priority in the coming year. Working group findings and any associated recommendations or proposed amendments to the program standards stemming from such study would then be brought forth for review and consideration at the second US SHIP House of Delegates meeting planned for August 2022.

The US SHIP pilot project investigators, staff, and technical committees have worked earnestly to ensure the Year 1 program standards being set forth for consideration represent a logical starting point and a tangible step forward in preparedness that can be achieved within the first-12 months of this start-up venture across the full-breadth of interested industry participants and states.

This inaugural US SHIP HOD meeting aims to convene a forum of industry, state, and federal partners to determine the Year 1 requirements for conferring an ASF-CSF Monitored Certification and to provide direction as to next steps to be pursued in the coming year.

Following the conclusion of the US SHIP HOD meeting and Year 1 requirements for certification being determined, this pilot project will be moving forward more in earnest with US SHIP Official State Agencies being stood-up and initiating the enrollment process of interested participants in Q4 2021.

As with the National Poultry Improvement Plan (NPIP), each participating state will be responsible for designating an entity to administer this program, verify participant status, and maintain a current list of the certified participants in their respective states (i.e., pilot project - US SHIP Official State Agency). NPIP Official State Agencies are commonly housed at the state animal health official's office (e.g., State Department of Agriculture or Board of Animal Health), the state producer association, the land grant university in their respective state, or at one of the state's official veterinary diagnostic laboratories.

US SHIP HOD participants are encouraged to review the more complete set of information related to this US SHIP pilot project (e.g., Project Overview, Narrated Presentation, 10 Talking Points, Roles/Responsibilities, FAQs, Costs, Benefits, etc.) available on the US SHIP website (usswinehealthimprovementplan.com).

As you have the opportunity to review the enclosed information, the US SHIP office would certainly welcome any questions, suggestions, or concerns.

US SHIP Contact Information:

Email: usship@iastate.edu

Phone: 515-294-8611

Website: usswinehealthimprovementplan.com

Thank you again for your interest in volunteering your time and insight towards helping form and shape this precedent setting endeavor that has the overarching goal of establishing a sustainable platform for safeguarding, certifying, and bettering the health of US swine and longer-term competitiveness of the US pork industry.

Meeting Objectives

US Swine Health Improvement Plan Pilot Project Investigators and Staff,

Collaborating Investigators (By Institution):

Iowa State University:

Rodger Main (Principal Investigator)

Chris Rademacher

James Roth

Jeff Zimmerman

South Dakota State University:

Jane Christopher-Hennings

University of Illinois:

James Lowe

University of Minnesota:

Montserrat Torremorell

Jerry Torrison

US SHIP Staff:

Tyler Holck, Senior Program Coordinator

Jordan Bjustrom Kraft, Industry Extension Specialist

Giovani Trevisan, Veterinary Diagnostic and Epidemiologic Information

Agenda

Monday - August 23, 2021

11:00 am to 1:00 pm — Meeting Registration (100 Level of Iowa Events Center)

1:00 to 2:00 pm — Opening Session

US SHIP HOD Meeting, Principle Aims, and Objectives

- Tyler Holck, US SHIP Senior Program Coordinator

Welcome to Iowa

- Mike Naig, Iowa Secretary of Agriculture

US SHIP ASF-CSF Monitored Pilot Project - Background, Scope, and Purpose

- Rodger Main, Iowa State University

Industry, State, and Federal Partner Perspectives

- Craig Rowles, Versova (Egg Producer and Veterinarian)
- Jack Shere, USDA APHIS Associate Administrator
- Bret Marsh, State Animal Health Official of Indiana

2:00 to 2:20 pm — Break

2:20 to 3:20 pm — Sampling & Testing Requirements for US SHIP ASF-CSF Monitored Certification

Sampling & Testing Scope & Purpose

- Jerry Torrison, University of Minnesota

Technical Aspects, Background, and Methodology

- Jeff Zimmerman, Iowa State University

Research Report – Evaluating Use of Oral Fluids for ASF Detection

- Aruna Ambagala, National Center for Foreign Animal Diseases, Canadian Food Inspection Agency

Proposed Plan of Work and Program Standards for Year 1 and Topics of Discussion for Sampling and Testing Breakout on Tuesday Morning

- Jerry Torrison, University of Minnesota

3:20 to 3:40 pm — Break

Agenda

3:40 to 4:40 pm ——— Traceability Requirements for US SHIP ASF-CSF Monitored Certification

Traceability Committee Scope & Purpose

- Jim Lowe, University of Illinois

Importance of Scalable Traceability in Disease Response

- Jeff Kaisand, State Animal Health Official of Iowa
- Beth Thompson, State Animal Health Official of Minnesota

Special Report – Traceability of Swine in Canada (PigTrace™ Canada)

- Jeff Clark, Canadian Pork Council

Proposed Program Standards for Year 1 and Topics to Explore Further at the Traceability Breakout Session on Tuesday Morning

- Jim Lowe, University of Illinois

4:40 to 5:00 pm ——— Break

5:00 to 6:00 pm ——— Biosecurity Requirements for US SHIP ASF-CSF Monitored Certification

Biosecurity Committee Scope & Purpose

- Montse Torremorell, University of Minnesota

Special Report – Options for Mitigating Risks of Transcontinental Movement of ASF/CSF in Feed Ingredients of Non-Animal Origin

- Jason Woodworth, Kansas State University

Proposed Program Standards for Year 1 and Topics to Explore Further in Biosecurity Breakout Sessions on Tuesday Morning

- Montse Torremorell, University of Minnesota

6:00 to 8:00 pm ——— Reception

8:00 pm ——— Adjourn

Tuesday - August 24, 2021

8:00 to 8:30 am — National Pork Board Perspectives and Updates
• Bill Even

Day 1 Recap and Review Plans, Processes, & Objectives for Day 2
• Tyler Holck

8:30 to 10:00 am — Concurrent Breakout Sessions (1st Set)

Session # 1A: **Sampling & Testing**

Year 1 Program Standards
Modeling estimates of disease spread and sampling
Peace time sampling and testing requirements
Initial 12-month research period

- Training/Information material
- Negative cohort study (NAHLN Labs)
- Processing fluids research
- Screening assay approval process

Working group action items and resolutions for Year 2

Moderators:
Jerry Torrison,
University of Minnesota
Jeff Zimmerman,
Iowa State University

Session # 1B: **Biosecurity – Year 1 Program Standards & Feed Biosafety**

Year 1 Program Standards
Swill or garbage feeding (Current Status in US)
Imported feed ingredients of non-animal origin from ASF/CSF positive regions of the world

- Options for mitigating risks
- Responsible imports / verified suppliers

In the event of an ASF/CSF introduction into the US, implications on feeding practices within the US (e.g., temporary restriction of feeding pig protein-based feed ingredients to pigs)
Working group action items and resolutions for Year 2

Moderators:
Montse Torremorell,
University of Minnesota
Jason Woodworth,
Kansas State University

Session # 1C: **Biosecurity – Cull and Sow Market Channels**

Current status
Impact on status of areas and regions
Options for improvement
Interest level in something other than the status-quo
Working group action items and resolutions for Year 2

Moderators:
Bret Marsh,
Indiana SAHO
Tyler Holck,
Iowa State University

Agenda

10:00 to 10:30 am — Break

10:30 to 12:00 pm — Concurrent Breakout Sessions (2nd Set)

Session # 2A: **Traceability**

Year 1 Program Standards
Thoughts on “PigTrace™-like” traceability
Traceability in other export-centric countries
Gap analysis
Interest in small-scale demonstration project (AgView)
Working group action items and resolutions for Year 2

Moderators:
Jim Lowe,
University of Illinois
Al Wulfekuhle,
Pork Producer, IA

Session # 2B: **Biosecurity – Site Plans**

Principles of Comprehensive Site Plans
History and perceived value of site plans
Synergies with Secure Pork Supply site plans
Interest level in exploring as a future program standard
Working group action items and resolutions for Year 2

Moderators:
Chris Rademacher,
Iowa State University
Montse Torremorell,
University of Minnesota

Session # 2C: **Biosecurity – Top Hog Transport Sanitation**

Current status
Impact on status of areas and regions
Framework for progress
Interest level in exploring as a future program standard
Working group action items and resolutions for Year 2

Moderators:
Rodger Main,
Iowa State University
Mark Schwartz,
Pork Producer, MN

12:00 to 1:00 pm — Lunch

1:00 to 3:00 pm — Closing Session

Take away messages from breakout sessions
Voting on Year 1 program standards / requirements for certification.
Voting on Year 2 priorities and working groups
Meeting wrap-up, Next Steps, and Charge for Year 2

3:00 pm — Adjourn US SHIP House of Delegates Meeting

Summary of Program Standards and Resolutions

Section 1. Program Standards (Year 1)

A summary of the program standards as passed at the inaugural US SHIP HOD meeting on August 23-24 in Des Moines, IA are listed below. These are the requirements for conferring the US SHIP ASF-CSF Monitored Certification to participating Production Sites and Slaughter Facilities. These requirements will be reviewed, discussed, and voted upon at this inaugural US SHIP HOD meeting.

Note: Slaughter facilities will not be required to have 100% of their supply chain originating from ASF-CSF Monitored Certified production (farm) sites to participate in this pilot project.

ENROLLMENT:

- Participating premises are to be enrolled with the US SHIP Official State Agency (US SHIP OSA) in the state in which the premises is located.

VETERINARY SERVICE PROVIDER:

- Producers are to maintain a valid veterinary client-patient relationship with a licensed and federally accredited veterinarian.

TRACEABILITY:

Premises level information

- Premises level demographic information for each participating premises is to be complete, accurate, current, and on-file with the US SHIP Official State Agency in which the premises is located.

The minimum required demographic information to be recorded for each premises is:	
<input checked="" type="checkbox"/> Premise Identification Number (PIN)	<input checked="" type="checkbox"/> Site Owner Contact Information
<input checked="" type="checkbox"/> Swine Owner Contact Information	<input checked="" type="checkbox"/> Common Name of Site
<input checked="" type="checkbox"/> Premise Type (Boar Stud, Breeding Herd, Farrow-Feeder/Finish, Growing Pig, etc.)	<input checked="" type="checkbox"/> Expected Site Capacity (Number of Breeding Swine and/or Growing Pigs)
<input checked="" type="checkbox"/> Site Location Information: Latitude and Longitude 911 Street Address, if one has been assigned	<input checked="" type="checkbox"/> Date of initial enrollment of the site in US SHIP, or date of first usage of the site by current swine owner
<input checked="" type="checkbox"/> Date of last usage of the site by swine owner (if applicable)	

TRACEABILITY: CONT.

Swine movement information

- Participants are to maintain records of the intrastate and interstate movements of live swine into and out of each participating premises.
- Participants must demonstrate competency in providing at least 30 days of movement information electronically in a common format (e.g., a prescribed CSV file) to the US SHIP Official State Agency in a timely manner (e.g. < 72 hours).

For participants with multiple participating premises within a given state, such competency can be demonstrated on a site-by-site basis or en-masse.

The minimum information required to be recorded for each movement is:		
<input checked="" type="checkbox"/> Date of movement	<input checked="" type="checkbox"/> Origin State	<input checked="" type="checkbox"/> Origin PIN
<input checked="" type="checkbox"/> Destination State	<input checked="" type="checkbox"/> Destination PIN	<input checked="" type="checkbox"/> Head in movement
<input checked="" type="checkbox"/> Animal type in movement		

Semen movement information

- Boar stud premises participants are to maintain records of the intrastate and interstate movements of semen distributed out of each participating premises.
- Participants must demonstrate competency in providing at least 30 days of movement information electronically in a common format (e.g., a prescribed CSV file) to the US SHIP Official State Agency in a timely manner (e.g. < 72 hours).

For participants with multiple participating premises within a given state, such competency can be demonstrated on a site-by-site basis or en-masse.

The minimum information required to be recorded for each movement is:		
<input checked="" type="checkbox"/> Date of movement	<input checked="" type="checkbox"/> Origin State	<input checked="" type="checkbox"/> Origin PIN
<input checked="" type="checkbox"/> Destination State	<input checked="" type="checkbox"/> Destination PIN	<input checked="" type="checkbox"/> Number of units in shipment

Animal Identification

- Certified ASF-CSF monitored participants must comply with existing state and federal laws regarding animal/group/lot identification.

BIOSECURITY:

Feed Supply

- The feeding of swill, garbage, or table waste that has the potential to include meat products is strictly prohibited.

BIOSECURITY: CONT.

Personnel

- Permitted individuals that have recently been exposed to livestock, feral/wild pigs or slaughter facilities in ASF/CSF/FMD positive regions or countries abroad should only visit farms or slaughter facilities in the US after observing a 5-day downtime since arriving in the US, and donning PPE (boots/coveralls, etc.) provided by farm site or slaughter facility being visited.

Enrollment Survey (Biosecurity Practices)

- At enrollment, participating premises will complete a survey to provide a simplistic categorization of some of the high-level biosecurity practices being implemented at the premises. Information from this survey is to provide quantitative data to assess current standards of practice across a broad spectrum of program participants. Results will help provide insight towards consideration of additional biosecurity related program standards in the future.

SAMPLING AND TESTING (DISEASE SURVEILLANCE):

- Initial 12-month Research Period: No Sampling and Testing Requirements of Participants

In the absence of an introduction of ASF/CSF, there will be no additional ASF/CSF sampling and testing requirements of participants beyond the current and/ongoing systems foreign animal disease (FAD) surveillance taking place across the US.

The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

- Maintain compliance with ASF-CSF Sampling and Testing Requirements

US SHIP sampling and testing requirements will *vary by Production Site Type* and the *ASF-CSF status* of the US, State, or Region (**Tables 1, 2, and 3**).

The program is based on targeted testing of animals of poor or sub-standard health. Targeted sampling enhances both the efficiency of detection and the simplicity of sample collection across the spectrum of commercial and non-commercial farms in the U.S.

The frequency of on-site sampling is a function of time and is independent of the timing of pig movement, thereby providing for a uniform and continuous system of disease monitoring across production sites, areas, and regions.

US SHIP ASF-CSF tests are to be used for screening purposes only. Non-negative results would result in the testing laboratory (USDA NAHLN lab certified to conduct ASF-CSF testing) contacting the appropriate State and Federal animal health officials to initiate a Foreign Animal Disease Investigation (FADI) for the collection of additional samples for official ASF-CSF testing (confirmatory) purposes.

Section 1. Program Standards (Year 1)

Table 1. Sampling and Testing Requirements for ASF-CSF Risk Level 1.

<div style="background-color: black; color: white; padding: 5px; display: inline-block;"> ASF/CSF Status = Level 1, US Negative (Peace Time) </div>				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Production Site Type	Specimen Type(s)	I or A ¹	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Boar Stud Mature Boars, Distributing Semen, ± On-Site Isolation	Oral Swab Blood Swab Oral Fluids	I I I	Research Period: No Sampling and Testing Requirements			
Breeding Herd Breed to Wean, Breeding/ Gestation/ or Farrow Only, ± On-Site GDU or Isolation	Oral Swab Blood Swab Oral Fluids	I I I				
Growing Pig Nursery, Grower, Finisher, Isolation	Oral Swab Blood Swab Oral Fluids	I I A				
Farrow to Feeder Farrow to Finish	Requirements of Breeding Herd + Growing Pig In Numbers, and Growing Pig Only in Frequency					
Small Holding ≥ 100 or < 1,000 Breeder or Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I I or A				
Non-Commercial < 100 Breeder or Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I A				

¹ I = Individual Sample, A = Aggregate (Group or Pen) Sample

Section 1. Program Standards (Year 1)

Table 2. Sampling and Testing Requirements for ASF-CSF Risk Level 2.

<div style="background-color: black; color: white; padding: 5px; font-weight: bold;"> ASF/CSF Status = Level 2, US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing is outside of Control Areas) </div>				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Production Site Type	Specimen Type(s)	I or A ¹	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Boar Stud Mature Boars, Distributing Semen, ± On-Site Isolation	Oral Swab	I	2X per month	10	2	-
	Blood Swab	I				
	Oral Fluids	I				
Breeding Herd Breed to Wean, Breeding/ Gestation/ or Farrow Only, ± On-Site GDU or Isolation	Oral Swab	I	Monthly	10	2	-
	Blood Swab	I				
	Oral Fluids	I				
Growing Pig Nursery, Grower, Finisher, Isolation	Oral Swab	I	Monthly	10	2	2
	Blood Swab	I				
	Oral Fluids	A				
Farrow to Feeder Farrow to Finish	Requirements of Breeding Herd + Growing Pig In Numbers, and Growing Pig Only in Frequency					
Small Holding ≥ 100 or < 1,000 Breeder or Feeder Swine	Oral Swab	I	Monthly	5	1	1 per 500, or 2 if > 500 pigs
	Blood Swab	I				
	Oral Fluids	I or A				
Non-Commercial < 100 Breeder or Feeder Swine	Oral Swab	I	Quarterly	5	1	1
	Blood Swab	I				
	Oral Fluids	A				

¹ I = Individual Sample, A = Aggregate (Group or Pen) Sample

Table 3. Sampling and Testing Requirements for ASF-CSF Risk Level 3.

<p>ASF/CSF Status = Level 3, US Positive, Immediately After Incursion, or if State or Region Positive. (All US SHIP Testing is Outside of Control Areas)</p>				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Production Site Type	Specimen Type(s)	I or A ¹	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Boar Stud Mature Boars, Distributing Semen, ± On-Site Isolation	Oral Swab	I	Weekly	10	2	-
	Blood Swab	I				
	Oral Fluids	I				
Breeding Herd Breed to Wean, Breeding/ Gestation/ or Farrow Only, ± On-Site GDU or Isolation	Oral Swab	I	2X per month	10	2	-
	Blood Swab	I				
	Oral Fluids	I				
Growing Pig Nursery, Grower, Finisher, Isolation	Oral Swab	I	Monthly	20	4	1 per 500 pigs with maximum of 8 per site
	Blood Swab	I				
	Oral Fluids	A				
Farrow to Feeder Farrow to Finish	Requirements of Breeding Herd + Growing Pig In Numbers, and Growing Pig Only in Frequency					
Small Holding ≥ 100 or < 1,000 Breeder or Feeder Swine	Oral Swab	I	Monthly	10	2	1 per 500, or 2 if > 500 pigs
	Blood Swab	I				
	Oral Fluids	I or A				
Non-Commercial < 100 Breeder or Feeder Swine	Oral Swab	I	Monthly	5	1	1
	Blood Swab	I				
	Oral Fluids	A				

¹ I = Individual Sample, A = Aggregate (Group or Pen) Sample

**End of Program Standards (Year 1)
for US SHIP House of Delegates**

Section 2. Breakout Session Topics at US SHIP HOD

The US SHIP Technical Committees (Traceability, Biosecurity, and Sampling & Testing) have identified a number of key items that go beyond the scope of program standards to be considered for Year 1. These topics and associated resolutions for specified plans of action on the topics below will be brought forward for participant feedback, consideration, and direction at a series of concurrent breakout sessions at this inaugural US SHIP HOD.

Specifically, assessing US SHIP HOD participant interest level, perceived value, feasibility, and need to consider a future US SHIP program standard associated with the given item/topic.

Pending feedback received, working groups will be formed and proceed forward to further investigate the specific items deemed to be of highest priority in the coming year. Working group findings and any associated recommendations or proposed amendments to the program standards stemming from such study, would then be brought forth for review and consideration at the second US SHIP House of Delegates meeting planned for August 2022.

TRACEABILITY Breakout Topics: (1 Session)

- Assessment of the status-quo and stakeholder perceptions of the potential value and need within the US pork industry for a more robust and comprehensive system of traceability.
- Abbreviated case study of the traceability standards of practice and systems used among other export centered pork producing countries across the world.
- GAP analysis assessing the feasibility (and interest level) of piloting a set of traceability standards patterned after the basic tenets of PigTRACE™ Canada within a subset of interested States and US SHIP pork industry participants (i.e., proceed with a smaller-scale demonstration in 1 or 2 states and associated supply chains, with opportunity to use AgView).

- Link to PigTRACE™ Canada Information: <https://www.cpc-ccp.com/traceability>

BIOSECURITY Breakout Topics: (4 Independent Sessions)

- Feed biosafety: (Session 1)
 - Ingredients of non-animal origin being imported from ASF/CSF endemic regions.
 - Responsible Imports / Verified Suppliers
 - Domestic feed supply: Response plan in the event of ASF-CSF introduction in US.
 - Temporary cessation of feeding pig protein based ingredients to pigs.
- Biosecurity Herd (Site) Plans: (Session 2)
- Sanitary standards of live haul transportation to/from points of concentration: (Session 3)
- Disease spread within and from live animal marketing channels (cull markets): (Session 4)

SAMPLING AND TESTING Breakout Topics: (1 Session)

- Sampling & Testing Requirements for ASF-CSF Risk Level 1, US Negative (Peace Time)
- Modeling of disease spread and sensitivity of detection across herds and regions
- ASF-CSF PCR Negative Cohort Study
 - Expanding supply-chain options for use as screening assays
- Pursuant of applied research on use of processing fluids for ASF/CSF screening
- Screening assay approval process

Section 3. Resolutions

RESOLUTION NUMBER: 2021 - 1

SUBMITTED BY: US SHIP General Conference Committee

SUBJECT MATTER: Traceability case study

WHEREAS, the US Swine Health Improvement Plan (SHIP) is a collaborative effort involving industry, state, and federal officials tasked with establishing a “national playbook” of technical standards associated with biosecurity, traceability, and sampling/testing,

WHEREAS, there is a perceived value and need within the US pork industry for a more robust and comprehensive system of traceability,

WHEREAS, the US SHIP seeks to leverage current expertise and successful practices domestically and globally,

WHEREAS, export centered pork producing countries outside the US have robust traceability standards of practice,

Now, therefore be it

RESOLVED, The US SHIP House of Delegates requests the conduct of a case study of traceability standards of practice and systems used among other export centered pork producing countries from which future technical standards may be developed and implemented for US SHIP.

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

RESOLUTION NUMBER: 2021 - 2
SUBMITTED BY: US SHIP General Conference Committee
SUBJECT MATTER: Pilot demonstration of a more comprehensive approach and system of traceability in the US pork industry (i.e., similar to PigTRACE™ Canada).

WHEREAS, the US Swine Health Improvement Plan (SHIP) is a collaborative effort involving industry, state, and federal officials tasked with establishing a “national playbook” of technical standards associated with biosecurity, traceability, and sampling/testing,

WHEREAS, there is a perceived value and need within the US pork industry for a more robust and comprehensive system of traceability,

WHEREAS, the US SHIP seeks to leverage current expertise and successful practices domestically and globally,

WHEREAS, Canada has a comprehensive swine traceability system in place tracking the inter-premises movement of all live pigs and dead pigs (rendering pick-up) within and between all provinces in Canada,

Now, therefore be it

RESOLVED, The US SHIP House of Delegates requests:
1. Completion of an in-depth GAP analysis assessing the feasibility of implementing a system of traceability standards patterned after the basic tenets of PigTRACE™ Canada.
2. Pursuit of a smaller-scale demonstration project of a more comprehensive approach and system of traceability within a subset of states and US SHIP pork industry participants (i.e., 1 or 2 states with a subset of interested supply chains tracking all inter-premises movements of pigs through slaughter, with opportunity for use of AgView software).

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

Section 3. Resolutions

RESOLUTION NUMBER: 2021 - 3
SUBMITTED BY: US SHIP General Conference Committee
SUBJECT MATTER: Feed Biosafety

WHEREAS, the US Swine Health Improvement Plan (SHIP) is a collaborative effort involving industry, state, and federal officials tasked with establishing a “national playbook” of technical standards associated with biosecurity, traceability, and sampling/testing,

WHEREAS, there is a recognized risk of disease transmission from both feed ingredients and whole feed,

WHEREAS, Research and risk assessments continue to be conducted to assess the risks associated with importing feed ingredients from ASF-CSF positive regions and potential mitigation strategies to reduce or eliminate those risks,

WHEREAS, the US SHIP program would like to implement an impactful feed biosafety program built upon the foundation of the risk assessments and research that will be recognized and implemented consistently by all participating states,

Now, therefore be it

RESOLVED, The US SHIP House of Delegates requests the commissioning of a working group to provide recommendations and next steps for the US SHIP program to address the risks associated with disease transmission in feed (including but not limited to regulated garbage feeding) for a broadly applicable feed biosafety plan to be recognized nationally.

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

Section 3. Resolutions

RESOLUTION NUMBER: 2021 - 4
SUBMITTED BY: US SHIP General Conference Committee
SUBJECT MATTER: Biosecurity Site Plans

WHEREAS, the US Swine Health Improvement Plan (SHIP) is a collaborative effort involving industry, state, and federal officials tasked with establishing a “national playbook” of technical standards associated with biosecurity, traceability, and sampling/testing,

WHEREAS, there is a recognized risk of disease transmission from both within and between live animal production sites,

WHEREAS, the USDA and National Pork Board have established a Secure Pork Supply (SPS) plan that describes training, procedures, and documentation to address key biosecurity steps to address disease transmission risks,

WHEREAS, the US SHIP program would like to implement an impactful site biosecurity program that would be recognized and implemented in a similar manner by all participating states,

Now, therefore be it

RESOLVED, The US SHIP House of Delegates requests the commissioning of a working group to integrate the Secure Pork Supply plan and provide recommendations and next steps for the US SHIP program for a broadly applicable biosecurity site plan to be recognized nationally.

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

RESOLUTION NUMBER: 2021 - 5

SUBMITTED BY: US SHIP General Conference Committee

SUBJECT MATTER: Sanitary standards of transportation to/from terminal markets

WHEREAS, Livestock trailers returning from points of concentration to farm sites that have not been cleaned and disinfected present as a primary and well understood risk factor for indirectly amplifying, recirculating, and broadly distributing disease causing agents in US swine.

WHEREAS, Livestock trailers picking swine up from points of concentration can also serve as an effective means for unknowingly moving disease causing agents across vast regions of the US.

WHEREAS, Industry live-haul sanitary standards (practices) for cleaning and disinfecting livestock trailers used for transporting breeding swine and pigs being moved on for further growing are generally good, if not world class.

WHEREAS, Live-haul sanitary standards (practices) for cleaning and disinfecting livestock trailers used for transporting swine to and from points of concentration are widely variable.

WHEREAS, In the event of a trade-impacting disease introduction into US swine, in the absence of being cleaned and disinfected between loads, live-haul transport trailers moving swine to or from points of concentration present as a primary vector for amplifying and broadly distributing said disease throughout the US. Live-haul transport related disease transmission risks would apply during both the pre-identification phase and throughout the extended Recovery Phase.

WHEREAS, The infrastructure and practices for more fully addressing these live haul transport related animal health risks associated with moving swine to slaughter are costly, resource intensive, and without sustainable near-term solutions. Such infrastructure and systems for sustainably and effectively cleaning and disinfecting the masses of livestock trailers hauling swine to or from points of concentration does not currently exist across the expanse of the US pork industry.

WHEREAS, Well-defined traceability and live-haul sanitary standards are hallmark components of swine health control and improvement programs being implemented in other export centric countries globally.

WHEREAS,

Meaningful progress to more fully address this larger scale swine health infrastructure issue that indirectly affects all US commercial pork producers would require a highly collaborative, well-thought, and multi-year effort.

RESOLVED,

Now, therefore be it

The US SHIP House of Delegates requests the commissioning of a working group centering on:

1. Quantifiably understanding the status-quo of the standards of practice and existing infrastructure for cleaning and disinfecting trailers returning from terminal points concentration.
2. Identifying existing production systems and supply chains routinely cleaning and disinfecting all trucks leaving terminal points of concentration prior to returning to farm sites to gauge best practices, costs, and infrastructure requirements.
3. Obtaining stakeholder sentiment from a broad range of producers and slaughter facilities across the country.
4. Preparing a summary of findings and formulating a set of recommendations to be presented and considered at the US SHIP HOD in 2022.

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

RESOLUTION NUMBER: 2021 - 6

SUBMITTED BY: US SHIP General Conference Committee

SUBJECT MATTER: Live animal marketing channels

WHEREAS, the US Swine Health Improvement Plan (SHIP) is a collaborative effort involving industry, state, and federal officials tasked with establishing a “national playbook” of technical standards associated with biosecurity, traceability, and sampling/testing focusing initially on certified and monitored status of ASF and CSF in the US, and

WHEREAS, the National Assembly of State Animal Health Officials (NASAHO) has previously convened a working group to assess the US swine marketing structure to determine ways to improve traceability and biosecurity in the disease transmission of Senecavirus A in live animal marketing channels, and

WHEREAS, the NASAHO estimated that 1 million hogs are reshipped after delivery to a slaughter facility each year in the US because the animals do not meet certain weight and type criteria of the plant, and an additional 5 million sows and boars are shipped annually, and

WHEREAS, those animals comprise the majority of supply to some processing facilities that thrive on sows, light-weight hogs, or other secondary market hogs, making preservation of the reshipment/cull animal system essential to some industry sectors, and

WHEREAS, those animals along with other swine such as feeder pigs, roaster pigs, exotic swine, pigs from sale barns and other marketing channels not listed present a threat of disease transmission in the event of an ASF or CSF incursion in the US, and

WHEREAS, the recommended action steps provided in the NASAHO working group to reduce the transmission of Senecavirus A can be of benefit to the US SHIP traceability and biosecurity efforts,

Now, therefore be it

RESOLVED, The US SHIP House of Delegates requests the commissioning of a working group to leverage the previous NASAHO efforts and recommendations. This working group would provide recommended next steps for the US SHIP program as it relates

Section 3. Resolutions

RESOLVED, (cont.)

BE IT FURTHER
RESOLVED,

to additional research or recommended program standards to better mitigate the risk and impact of disease transmission in and from all live animal marketing channels. Any such recommendations related to a US SHIP program standard would then be considered further at the US SHIP 2022 HOD.

The marketing segment will have an opportunity for voting representation beginning with the 2022 US SHIP HOD.

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

RESOLUTION NUMBER: 2021 - 7
SUBMITTED BY: US SHIP General Conference Committee
SUBJECT MATTER: Sampling & Testing, 12 month Research Period, Plan of Work

WHEREAS, The US Swine Health Improvement Plan (SHIP) is a collaborative effort involving industry, state, and federal officials tasked with establishing a “national playbook” of technical standards associated with biosecurity, traceability, and sampling/testing focusing initially on certified and monitored status of ASF and CSF in the US

WHEREAS, Early detection of disease, and well understood, proficient, capable, and scalable systems of disease surveillance are foundational elements to preparedness.

WHEREAS, US SHIP aims provide a well-defined, practical, effective, broadly recognized (i.e., uniform guidance across states), and working system of testing (outside of ASF-CSF Control Areas) that can be readily scaled-up in the event of an introduction of ASF-CSF into the US, State, or Region.

WHEREAS, The first 12-months of the US SHIP Sampling and Testing related activities are to serve as a “Research Period” to allow for the completion of a series of efforts that aim to better prepare, inform, and refine US SHIP ASF-CSF Monitored certification sampling and testing program standards going forward.

Please Note: During this initial 12-month Research Period, in the absence of an introduction of ASF/CSF into the US, there are no plans or proposed program standards for additional ASF/CSF sampling and testing requirements of participants beyond the current and/ongoing systems FAD surveillance taking place across the US.

Now, therefore be it

RESOLVED, The US SHIP House of Delegates provides its support for the following US SHIP Sampling & Testing related items to proceed forward as part of the plan of work to be initiated during this initial 12-month Research Period.

1. Further explore and prepare a summary document with options, considerations, and recommendations for US SHIP ASF-CSF Risk Level 1 (Peace Time) sampling and testing requirements.

RESOLVED, (cont.)

2. Complete further modeling of disease spread and sensitivities of detection achieved via US SHIP ASF-CSF Monitored participatory sampling and testing requirements.
3. Work closely with USDA, SAHO, and industry partners to complete a study (ASF/CSF PCR Negative Cohort Study) that aims to build upon a number of USDA sponsored efforts looking to expand the number of ASF/CSF PCR assays and sample types approved for use to support ASF/CSF diagnostic efforts. This study would make a substantive contribution towards a much larger collective effort focused on creating a step-change in the ASF/CSF PCR diagnostic testing capacity and state of readiness across the NAHLN.
4. Pursuant of applied research evaluating the presence/absence of ASF/CSF in processing fluids of infected piglets. This course of study would aim provide the foundational information needed to understand the potential fitness for using processing fluids as a sample type for ASF/CSF disease monitoring purposes in otherwise asymptomatic breeding herds.
5. Clarify process for review and approval of screening assays to be used for US SHIP ASF-CSF Monitored certification purposes.

Effective Date: August 24, 2021

Directed to: US SHIP pilot program

Introduction to US Swine Health Improvement Plan Pilot Project

Globalization, multi-site production, and a marked dependence on export markets have changed the landscape of swine health and the impact of disease incursion on the US pork industry. The opportunities, challenges, and animal health related risks in the US pork industry have not likely ever been greater. In particular, trade impacting disease risks and recurring endemic diseases of high consequence are substantial animal health related challenges. Scalable solutions to these major and well-recognized challenges are largely beyond the immediate control or influence of any individual producer, packer, state, or existing entity.

Next generation animal health assurance and area regional disease control solutions are needed to secure the future of the highly mobile and export-centric US pork industry. Experience affirms that solutions offered by government or industry, each acting independently, will not be timely, capable, or robust enough to keep pace with industry needs. State and federal animal health agencies lack the resources, capacity, and industry-specific know-how, while industry only solutions lack the coordination and authority to establish official standards and health status certifications across legally recognized areas, states, regions, or by well-defined segments of the commercial pork industry.

A 12-month case study commissioned by the Swine Health Information Center seeking an in-depth understanding of the US poultry and egg industries' National Poultry Improvement Plan (NPIP) was completed in June 2019. Findings suggest the basic tenets and approach used by the NPIP could serve as a road map for pork producers and packers (slaughter facilities) interested in more directly and systematically addressing the major swine health issues of high consequence, and better positioning the future of the US pork industry in the domestic and global marketplace.

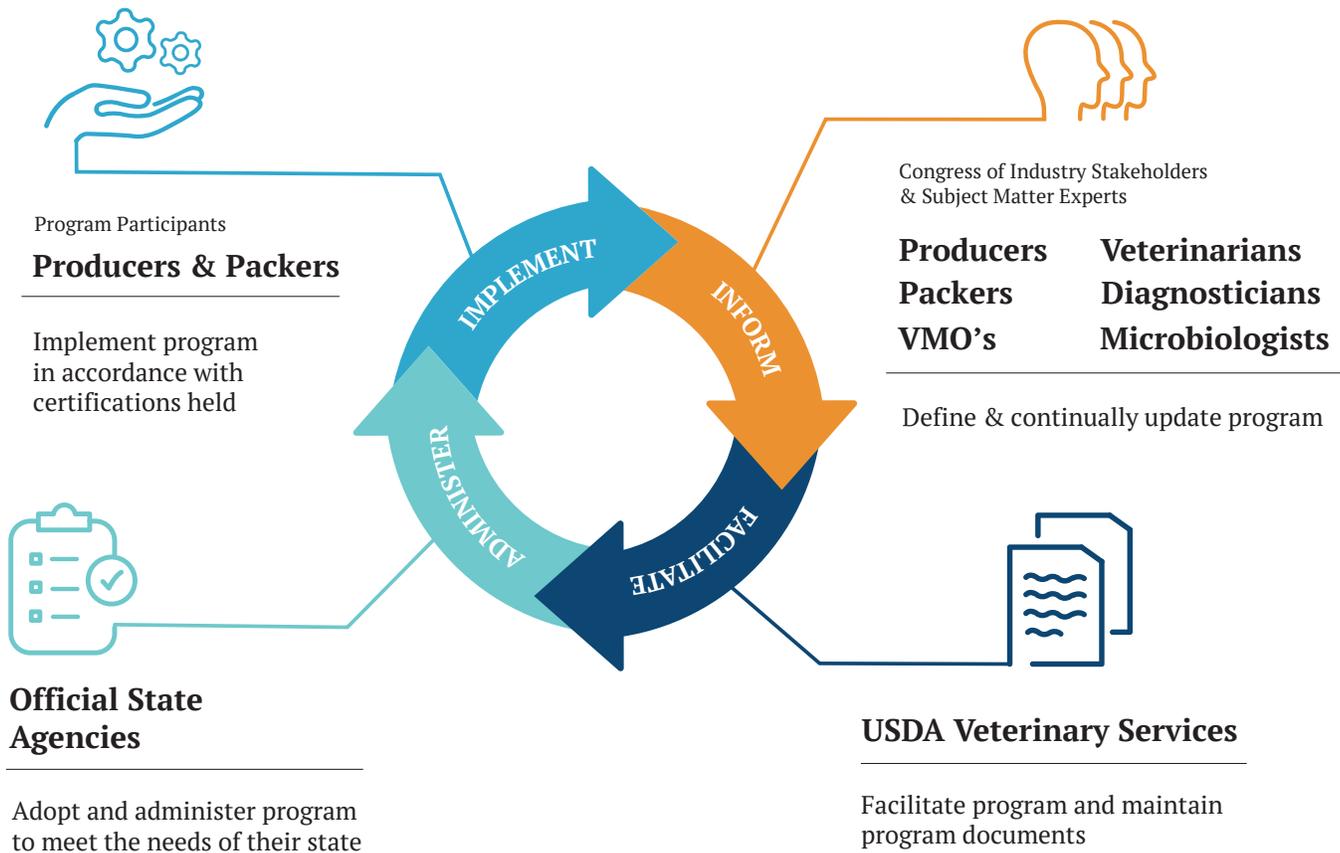
Our project team of swine interest veterinarians from four land grant universities is spearheading a USDA sponsored pilot project entitled, ***“The Development and Demonstration of a US Swine Health Improvement Plan modelled after the National Poultry Improvement Plan”***.

The primary objectives of this endeavor are to develop and implement a US Swine Health Improvement Plan African Swine Fever (ASF)-Classical Swine Fever (CSF) Monitored Certification of US pork production operations modelled after the basic tenets of the National Poultry Improvement Plan (NPIP) H5/H7 Avian Influenza Monitored certification of US Commercial Poultry operations. Upon the conclusion of this two-year pilot project (should there be interest), the experiences gained and operations established through the pilot could be transitioned into a more formal and ongoing platform (i.e., US Swine Health Improvement Plan or US SHIP) for safeguarding, certifying, and bettering the health of US swine and longer-term competitiveness of the US pork industry.

Established in 1935, NPIP is an industry, state, and federal partnership that has long played a central role in bettering the health of US poultry and the competitiveness of the US poultry and egg industries. NPIP has no peer in US animal agriculture. NPIP serves to safeguard, certify, and represent the health of US poultry. NPIP's health status classifications are the officially recognized standards of poultry health used to demonstrate freedom of disease for both trade and non-trade

impacting diseases. NPIP provides clear and uniform standards recognized across all 50 US states and by international trading partners. Participation in NPIP is voluntary but essentially universal among commercial-scale poultry and egg production operations in the US. NPIP’s unique industry, state, and federal partnership provides a platform wherein industry stakeholders play a direct and on-going role in establishing poultry health standards, definitions, and policies for the US poultry and egg industries.

Figure. NPIP’s ongoing system of operations across the US poultry and egg industries.



NPIP’s H5/H7 Avian Influenza Monitored certification supports ongoing disease surveillance and the adoption of practices that mitigate disease spread into and between farms. The H5/H7 Avian Influenza Monitored certification held by meat-type chicken and turkey slaughter plants, commercial egg laying operations, and states has played a primary role in helping sustain interstate commerce and export markets from unaffected regions during times of an Avian Influenza Virus (AIV) outbreak of significance affecting US poultry.

The US pork industry has evolved, improved, and changed radically over the last two generations of pork producers. Experiences and ongoing risks associated with the intercontinental movement of disease agents, the ongoing evolution of a complex network of multi-site and multi-state production systems and marketing channels, and an increased dependence on export markets, are among the most significant factors influencing the overall landscape of and impact of swine health on the US pork industry. Trade impacting disease related market risks and the burden of recurring endemic diseases of high consequence are grand challenges. In these investigators’ opinion, the primary, macro level (industry wide) swine health related risks, vulnerabilities, and opportunities for improvement are generally well understood. Twenty-first century approaches and solutions

are needed to address the ever-more complex and consequential swine health challenges (and opportunities) that extend beyond the individual producer's or packer's farm gate.

History suggests sustainable improvements to the health status of swine herds across large areas, regions, states, and country require industry leaders to set-forth simplistic, practical, strategic, and effective baseline standards of practice that can be widely adopted by commercial pork producers. Biosecurity, traceability, and surveillance have long been foundational elements in the prevention and control of infectious diseases, and in the representation of a given health status across supply chains, areas, and regions. Industry led leadership, collaboration, adaptability, constancy of purpose, and consistency of execution across the masses have been the hallmarks of historical successes.

Establishing a US Swine Health Improvement Plan (US SHIP) presents as opportunity to create an officially recognized and proven platform for sustainably making stepwise progress in addressing animal health related issues of high consequence that extend beyond the immediate influence of an individual state, producer, or packer's farm gate. ***Proactively establishing an officially recognized platform, system of ongoing operations, certification, and practical surveillance strategies used for mitigating the risks of disease introduction and demonstrating freedom of trade impacting diseases across supply chains, areas, states, and regions prior to an incursion of a trade impacting disease would seemingly be in the best interests of the greater US pork industry.***

In contrast, the absence of an industry-driven and empowered body to establish nationally recognized definitions for swine health sets the stage for a patchwork of local standards and definitions. This patchwork lacks the nationally- and internationally-recognized credibility needed to support interstate or international commerce from unaffected regions during a time of crisis. In short, the NPIP model of shared governance shifts much of the burden and responsibilities for developing, continually updating, and implementing swine health related standards, definitions, policies, and rules from the federal and state animal health agencies to an empowered body of industry stakeholders. ***Based on NPIP's proven record, this approach would better position industry stakeholders to influence issues related to safeguarding, improving, and representing the health of US swine.***

Systems of traceability and routine biosecurity (sanitary) practices are important components of trade impacting disease preparedness and in better positioning the industry to mitigate the impact of recurring endemic diseases. Incorporating baseline traceability and sanitary standards into a voluntary health status certification program would have significant benefits across supply chains, states, regions, or entire US pork industry. The same systems, practices, and structure advanced to mitigate trade-impacting disease related market risks, would also better position the US pork industry to make stepwise progress toward reducing the impact of recurring endemic diseases of high consequence.

US Swine Health Improvement Plan Pilot Project Investigators,
Main R¹, Roth J¹, Christopher-Hennings J², Lowe J³, Rademacher C¹, Torremorell M⁴, Torrison⁴,
and Zimmerman J¹.

¹Iowa State University, ²South Dakota State University, ³University of Illinois, and ⁴University of Minnesota.

Specific Aims of US SHIP ASF-CSF Monitored Certification

1. Enhance all three aspects (prevention, response, & recovery) of trade impacting disease (TID) preparedness amongst participating producers, slaughter facilities, and states through proactively establishing an industry-informed and working system of operations and certification built upon well-defined program requirements for biosecurity, traceability, and disease surveillance.
2. Reduce the impact of recurring endemic diseases of high consequence through the sustainable advancement of sanitary standards and practices that mitigate disease spread into and between farms.
3. Provide US pork industry participants a first-hand experience in developing and participating in an “NPIP like” program customized to meet the needs of the US pork industry.

Biosecurity, traceability, and disease surveillance are each critical elements to trade impacting disease (TID) preparedness and are the cornerstones of this US SHIP ASF-CSF Certification Program.

While advancing practices that mitigate risks of disease introduction into the country is the top priority, proactively developing and implementing an industry-informed and functional system prior to an ASF-CSF incursion will also enable participants and states to readily scale up the necessary testing to demonstrate freedom of disease across specified supply chains, areas, regions, and market segments throughout a response and recovery phase.

The US SHIP ASF-CSF Monitored Certification Program aims to play a primary role in helping support the responsible movement of swine and continuity of business and trade outside of ASF-CSF control areas. Implementing uniform and effective systems (across supply chains, states, & regions) for early detection and demonstrating evidence of freedom of disease are foundational elements needed to support ongoing interstate and international commerce over the course of a response and recovery period.

Guiding Principles and Litmus Test Used in Developing US SHIP

Guiding Principles Being Used in Developing US SHIP:

1. Don't recreate the wheel
2. Simple (requirements for certification must be clear and concise)
3. Inclusive (broadly applicable across full spectrum of US pork industry)
4. Scalable
5. Flexible
6. Synergistic with and complementary to other FAD preparedness efforts
7. Founded on sound and practical science
8. Building a tangible/sustainable platform to Get Off the Ground
 - Structured to continually evolve and meet industry needs over the course of time

Litmus Test Being Used in Developing US SHIP Program Standards:

1. Does it represent a tangible improvement to the status quo of FAD preparedness?
2. Will a broad spectrum of participants (packers/producers) agree to it?
3. Is it or can it be done across the broad spectrum of US pork industry participants & states?
4. Does it provide a foundation that can be built upon, improved, and updated over time?

Importance of Broadly Applicable Standards and Participation

Developing US SHIP in such a way that encourages very large-scale participation across the full-spectrum of industry participants and states is absolutely critical to achieve the overarching objectives of this US SHIP pilot project endeavor (i.e., establishing a sustainable platform for safeguarding, certifying, and bettering the health of US swine and longer-term competitiveness of the US pork industry).

The US poultry & egg industries' NPIP has evolved over the course of the past 85 years in such a way that 100% of the Primary Breeders and greater than 99% of the Commercial Poultry (e.g., Meat-Type Chicken Slaughter Plants, Meat-Type Turkey Slaughter Plants, & Commercial Table Egg Layers) in the US participate in NPIP.

This critical mass of participation across all 50-states is unquestionably a significant contributing factor toward NPIP's longstanding and proven track-record of success.

Such levels of participation have been critical towards providing US Commercial Poultry operations in states and regions not affected by an AIV event of significance (i.e., HP-AIV or a lowly pathogenic AIV) an officially recognized mechanism for demonstrating freedom from disease. The H5/H7 Avian Influenza Monitored classification held by meat-type chicken and turkey slaughter plants, commercial table egg laying operations, and states has played a primary role in helping sustain export markets and interstate commerce from unaffected regions during times of an AIV outbreak of significance affecting commercial poultry in the US.

Obtaining a critical mass of participation in US SHIP is a foundational element necessary towards being able to make tangible progress towards protecting, improving, and being able to represent the health status of all domestic pig production operations across supply chains, areas, states, and regions.

The US SHIP Technical Committees have worked diligently in effort to draft an initial set of program standards for the US SHIP HOD consideration that are relevant, palatable, practical, and represent a tangible step forward across the tremendous diversity of operations that make up the greater US pork industry.

2017 Census of Agriculture - farms with swine		
FARM INVENTORY	TOTAL FARMS	TOTAL PIGS
< 1000 pigs	56,099. (84.4%)	2,044,661. (2.8%)
1,000 to 4,999 pigs	6,740. (10.1%)	17,635,061. (24.4%)
> 5,000 pigs	3,600. (5.4%)	52,701,285. (72.8%)
TOTAL	66,439	72,381,007

The diversity amongst the various types of pork producing operations (e.g., large, small, integrated, independent, indoor, outdoor, breeding stock, grow-finish, commercial and non-commercial) should not be underestimated. While great differences exist in the degree of sophistication, capital investment in biosecurity related infrastructure, management practices, and total numbers of pigs housed at the various different types of pork production operations, each of the various segments of the US pork industry play a highly important role when it comes to being able to represent the health status of a supply chain to a given slaughter facility or all the pigs across a geographical area, state, region, or country.

Unlike many endemic diseases, where the primary area of emphasis and economic return come from controlling or eliminating pathogens at the level of the breeding herds on a farm by farm basis, trade impacting diseases need to be kept out of and/or eliminated from the entirety of the pork supply chain across areas, states, regions, and country. Thus, a very different situation, and again, requiring a critical mass (if not universal) of participation and unified effort involving and relevant to all segments of the US pork industry.

It should be recognized that Compartmentalization (i.e., demonstrating evidence of freedom of disease from specific sites or operations within an affected region) is distinct from, and far more difficult than, Regionalization. Regionalization involves demonstrating evidence of freedom of disease in unaffected or no longer affected, areas, states, or regions.

While pursuing efforts to establish a system for conferring officially recognized “Compartments” may be of interest to some portion of US pork industry participants, such an endeavor is far outside the scope of this US SHIP ASF-CSF Monitored Certification pilot project. The extensive rigor and bar for achieving such programmatic standards exceeds the scope and resources of this pilot project.

Establishing a fully functional US SHIP could provide the foundation for developing an “ASF-CSF Free Compartment”-based certification to be considered and/or pursued by a select subset of US pork industry participants in the future (i.e., similar to the Avian Influenza Free Compartment certification established in 2018 by NPIP for US Primary Breeder Operations). However, the organization, resources, and bar to achieve and maintain such a compartmentalization standard should not be underestimated.

Sampling and Testing - Non-Technical Summary

Scope and Purpose of Sampling and Testing US SHIP ASF-CSF Monitored Certification:

Complement the existing and officially recognized USDA ASF-CSF efforts.

Enhance probability of early detection via expanding systems of ASF-CSF surveillance.

Provide a well-defined, practical, effective, broadly recognized (i.e., uniform guidance across states), and working system of testing (outside of ASF-CSF Control Areas) that can be readily scaled-up in the event of an introduction of ASF-CSF into the US, State, or Region.

US SHIP ASF-CSF testing *is not intended* to serve as a basis for official ASF-CSF diagnosis or for use in support of animal movement within ASF-CSF control areas.

Research period: The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

US SHIP ASF-CSF tests are to be used for *screening purposes only*. Consistent with current protocols at USDA NAHLN labs routinely conducting ASF-CSF PCR testing, samples with non-negative test results will be forwarded to the USDA Foreign Animal Disease Diagnostic Laboratory (FADDL) for additional (confirmatory) testing. Simultaneously, the testing laboratory will be responsible for contacting the appropriate State and Federal animal health officials to initiate a Foreign Animal Disease Investigation and collection of additional samples for official ASF-CSF testing (confirmatory) purposes.

In the event of introduction of ASF or CSF into the US, US SHIP ASF-CSF Sampling and Testing provides participating farm sites (i.e., supply chains to slaughter facilities), states, and regions a practical and effective means for enhancing early detection and documenting evidence of freedom of ASF-CSF outside of ASF- CSF control areas. US SHIP ASF-CSF sampling and testing *is intended* to play a primary role in helping support the responsible movement of swine and continuity of business and trade outside of ASF-CSF control areas. Implementing uniform and effective systems for early detection and demonstrating evidence of freedom of disease are foundational elements needed to support ongoing interstate and international commerce over the course of a response and recovery period.

Scaled (Dynamic) Testing Requirements:

Testing requirements for certification will vary by Production Site type and ASF-CSF status of the US, State, or Region.

US SHIP Production Site Types:

Boar Stud:	Production site with mature boars (inventory) that distribute semen to other production sites. (e.g., boar stud, with or without on-site isolation).
Breeding Herd:	Production site with breeding females and house $\geq 1,000$ breeder or feeder swine. (e.g., breed-to-wean, breeding/gestation or farrowing only, with or without on-site gilt isolation/grow-out).
Growing Pig:	Production site with $\geq 1,000$ feeder swine (nursery, grower, or finisher).
Farrow to Feeder or Farrow to Finish:	Production site with breeding females, grow feeder swine for purposes other than breeding stock replacement for this particular farm site, and house $\geq 1,000$ breeder or feeder swine.
Small Holding:	Production sites with ≥ 100 and $< 1,000$ breeder or feeder swine.
Non-commercial:	Production sites with < 100 breeder or feeder swine.

US SHIP ASF-CSF Risk Levels:

Level 1:	US Negative (Peace Time)
Level 2:	US Positive, Operations Normalizing, and State or Region Negative. (Outside of Control Areas)
Level 3:	US Positive, Immediately After Incursion, or if State or Region Positive. (Outside of Control Areas)

The US SHIP ASF-CSF sampling strategy is based on targeted testing of animals of poor or sub-standard health. Targeted sampling enhances both the efficiency of detection and the simplicity of sample collection across the spectrum of commercial and non-commercial farms in the US.

The frequency of on-site sampling is a function of time and is independent of the timing of pig movement, thereby providing for a uniform and continuous system of disease monitoring across production sites, areas, and regions.

See Sampling & Testing Requirements for Risk Level 1, 2, & 3 in Tables on pages 39-41.

Sample Collection and Submission for Testing:

Samples are collected and submitted to the testing laboratory under the guidance and direction of an officially licensed and accredited veterinarian.

Specimen types are supported by the peer-reviewed literature as valid for ASFV and CSFV detection.

Samples are easy to collect and appropriate for high-throughput PCR testing.

Testing Laboratories:

Testing for ASF-CSF Monitored certification can only be performed in participating USDA NAHLN laboratories certified by the USDA to conduct ASF-CSF testing.

Accessibility (Reporting) of Test Results:

Test results are to be accessible (reported) to the Submitting Veterinarian, Program Participant, US SHIP Official State Agency, and the appropriate State Animal Health Officials and USDA Veterinary Services Agencies.

Consistent with existing procedures, reporting of confirmed positive ASF-CSF test results and response to detection is the responsibility of the appropriate State and Federal Animal Health Officials.

Test Methods (Assays):

ASF-CSF diagnostic test methods (assays) shall be equivalent or comparable to USDA NAHLN ASFV and CSFV approved test methods, shall be well-supported by test validation and personnel training records in accordance with quality assurance standards set-forth by the American Association of Veterinary Laboratory Diagnosticians (AAVLD), and shall be approved by the US SHIP Sampling and Testing Technical Committee.

Key Elements / Traits Needed in US SHIP ASF-CSF Sampling & Testing Strategy:

User friendly (sample collection, sample submission, and testing).

Broadly applicable (across broad spectrum of production operations).

Founded on sound science and quality diagnostic laboratory practices.

Proficient (effective and efficient use of resources).

Practical, scalable, and cost effective.

Leverages breadth of expertise of veterinarians, pork producers, and diagnosticians actively working to support the health and diagnostic needs of US swine on a daily basis.

Capitalizes on ASF/CSF specific expertise, experience in large-scale public and private sector disease response and eradication efforts, lessons-learned from COVID-19 response and related experiences in human diagnostic space, and practical knowhow derived from operating high-volume veterinary diagnostic laboratory settings.

Flexible (multiple options for assays, vendors, laboratories, supply chains of sample collection and testing supplies, and ability to evolve over time).

Deemed appropriate / workable by a representative body of industry, state, & federal partners.

Table 1. Sampling and Testing Requirements for ASF-CSF Risk Level 1.

<div style="background-color: black; color: white; padding: 5px; display: inline-block;"> ASF/CSF Status = Level 1, US Negative (Peace Time) </div>				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Production Site Type	Specimen Type(s)	I or A ¹	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Boar Stud Mature Boars, Distributing Semen, ± On-Site Isolation	Oral Swab	I	Research Period: No Sampling and Testing Requirements			
	Blood Swab	I				
	Oral Fluids	I				
Breeding Herd Breed to Wean, Breeding/ Gestation/ or Farrow Only, ± On-Site GDU or Isolation	Oral Swab	I	Research Period: No Sampling and Testing Requirements			
	Blood Swab	I				
	Oral Fluids	I				
Growing Pig Nursery, Grower, Finisher, Isolation	Oral Swab	I	Research Period: No Sampling and Testing Requirements			
	Blood Swab	I				
	Oral Fluids	A				
Farrow to Feeder Farrow to Finish	Requirements of Breeding Herd + Growing Pig In Numbers, and Growing Pig Only in Frequency					
Small Holding ≥ 100 or < 1,000 Breeder or Feeder Swine	Oral Swab	I	Research Period: No Sampling and Testing Requirements			
	Blood Swab	I				
	Oral Fluids	I or A				
Non-Commercial < 100 Breeder or Feeder Swine	Oral Swab	I	Research Period: No Sampling and Testing Requirements			
	Blood Swab	I				
	Oral Fluids	A				

¹ I = Individual Sample, A = Aggregate (Group or Pen) Sample

Table 2. Sampling and Testing Requirements for ASF-CSF Risk Level 2.

**ASF/CSF Status = Level 2,
US Positive, Operations Normalizing, and
State or Region Negative (All US SHIP
Testing is outside of Control Areas)**

Sampling & Testing Requirements (Alternative Options)

Production Site Type	Specimen Type(s)	I or A ¹	Frequency / Timing of Sampling	Option 1 Individual Only		Option 2
				# of Individuals	# of Pools (Groups of up to 5)	Aggregate Only (Group or Pen) # of Samples
Boar Stud Mature Boars, Distributing Semen, ± On-Site Isolation	Oral Swab Blood Swab Oral Fluids	I I I	2X per month	10	2	-
Breeding Herd Breed to Wean, Breeding/ Gestation/ or Farrow Only, ± On-Site GDU or Isolation	Oral Swab Blood Swab Oral Fluids	I I I	Monthly	10	2	-
Growing Pig Nursery, Grower, Finisher, Isolation	Oral Swab Blood Swab Oral Fluids	I I A	Monthly	10	2	2
Farrow to Feeder Farrow to Finish	Requirements of Breeding Herd + Growing Pig In Numbers, and Growing Pig Only in Frequency					
Small Holding ≥ 100 or < 1,000 Breeder or Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I I or A	Monthly	5	1	1 per 500, or 2 if > 500 pigs
Non-Commercial < 100 Breeder or Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Quarterly	5	1	1

¹ I = Individual Sample, A = Aggregate (Group or Pen) Sample

Updated Sept 1, 2021

Table 3. Sampling and Testing Requirements for ASF-CSF Risk Level 3.

**ASF/CSF Status = Level 3,
US Positive, Immediately After Incursion,
or if State or Region Positive. (All US
SHIP Testing is Outside of Control Areas)**

Sampling & Testing Requirements (Alternative Options)

Production Site Type	Specimen Type(s)	I or A ¹	Frequency / Timing of Sampling	Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
				# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Boar Stud Mature Boars, Distributing Semen, ± On-Site Isolation	Oral Swab Blood Swab Oral Fluids	I I I	Weekly	10	2	-
Breeding Herd Breed to Wean, Breeding/ Gestation/ or Farrow Only, ± On-Site GDU or Isolation	Oral Swab Blood Swab Oral Fluids	I I I	2X per month	10	2	-
Growing Pig Nursery, Grower, Finisher, Isolation	Oral Swab Blood Swab Oral Fluids	I I A	Monthly	20	4	1 per 500 pigs with maximum of 8 per site
Farrow to Feeder Farrow to Finish	Requirements of Breeding Herd + Growing Pig In Numbers, and Growing Pig Only in Frequency					
Small Holding ≥ 100 or < 1,000 Breeder or Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I I or A	Monthly	10	2	1 per 500, or 2 if > 500 pigs
Non-Commercial < 100 Breeder or Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Monthly	5	1	1

¹ I = Individual Sample, A = Aggregate (Group or Pen) Sample

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Sampling and Testing - Technical Summary

Overview:

African swine fever virus (ASFV) and classical swine fever virus (CSFV) are threats to US pork producers because they can move quickly and with devastating economic consequences, e.g., the detection of ASFV in the United States is expected to result in an immediate 40-50% reduction in live hog prices (Carriquiry et al., 2020).

Scope and Purpose of Sampling and Testing for US SHIP ASF-CSF Monitored Certification:

ASF-CSF Monitored sampling and testing requirements complement existing systems of ASFV-CSFV surveillance in the US outside of Control Areas.

ASF-CSF Monitored certification is based on sample collection on production sites and testing performed in National Animal Health Laboratory Network (NAHLN) laboratories. Active surveillance on production sites was identified as among the optimal ASFV detection strategies (Guinat et al., 2017).

A production site is a geographically definable area that includes pork production facilities and ancillary structures under common ownership or management systems and the surrounding space within a 100-foot perimeter (see definitions).

The NAHLN is a system of Federal, State, and university-associated animal health laboratories within the US.

ASF-CSF Monitored sampling and testing requirements are not designed to establish an individual production site as free of ASFV or CSFV via a single point in time sampling event. However, when statistically analyzed in the aggregate, test results from ASF-CSF Monitored production sites can support the ASF-CSF-free status of production sites across a defined geographic region (Hu et al., 2020).

In the event of the introduction of ASFV or CSFV into the U.S., the existence of uniform and effective systems for early detection and documenting freedom from disease will expedite interstate and international commerce outside of Control Areas over the course of the response and recovery period.

Basis of Sampling and Testing:

African swine fever virus (ASFV)

ASFV is a genetically diverse DNA virus classified into 24 genotypes on the basis of partial p72 gene nucleotide sequencing (Sánchez-Vizcaíno et al., 2019a,b). Since 2007, genotype II has spread widely in Africa, Asia, and Europe and presents an on-going risk to regions currently free of the virus.

In the pig, ASFV initially replicates in monocytes and macrophages of the lymph nodes nearest the point of virus entry. Thereafter, ASFV spreads through blood and/or lymphatic systems to secondary sites of replication, e.g., lymph nodes, bone marrow, spleen, lung, liver, kidney, and tonsil (Fernández et al., 2007; Howey et al., 2013; Sánchez-Vizcaíno et al., 2019a,b).

The incubation period (time from exposure to clinical disease) ranges from 3 to 19 days, depending on the isolate and route of exposure (Sánchez-Vizcaíno et al., 2019a,b). Pig to pig ASFV transmission may be slow in newly-infected herds and ASFV mortalities may be minimal and pass unnoticed (Guinat et al., 2017; Schulz et al., 2019).

ASFV cannot be diagnosed on the basis of clinical signs. Laboratory testing is required to differentiate ASFV from pathogens that may produce similar clinical signs, e.g., CSFV, erysipelas, salmonellosis, pseudorabies, bacterial septicemia, PRRSV, and others (Sánchez-Vizcaíno et al., 2019a,b; Schulz et al., 2019; USDA APHIS, 2019).

Classical swine fever virus (CSFV)

CSFV is an antigenically and genetically diverse RNA virus classified into 3 major genetic groups (Ganges et al., 2020; Kirkland et al., 2019). Eradicated from the US in 1978, CSFV continues to circulate widely in much of the world (Blome et al., 2017).

Typically, the primary site of CSFV replication is the tonsils. Thereafter, the virus spreads to regional lymph nodes and secondary sites of replication via the blood and lymph circulatory systems (Blome et al., 2017; Kirkland et al., 2019).

The incubation period (time from exposure to clinical disease) ranges from 4 to 10 days, but less virulent strains may not induce clinically apparent disease for 4 - 8 weeks (Blome et al., 2017; Kirkland et al., 2019). Adult animals are generally less severely affected than young animals (Drew and Pasick, 2019).

CSFV cannot be diagnosed on the basis of clinical signs. Laboratory testing is required to differentiate CSFV from pathogens that may produce similar clinical signs, e.g., ASFV, erysipelas, salmonellosis, pseudorabies, bacterial septicemia, PRRSV, and others (Kirkland et al., 2019; USDA APHIS, 2013).

Timeline for Appearance of Nucleic Acids and Antibody in Diagnostic Specimens:

African swine fever virus

ASFV appears in blood (viremia) 1 to 8 days post exposure. Depending on the assay, detectable levels of ASFV-specific antibody appear in blood and oral fluids 7 to 12 days post exposure

(Gallardo et al., 2019; Giménez-Lirola et al., 2016; Sánchez-Vizcaíno et al., 2019a,b; Zhao et al., 2019).

ASFV DNA may be present in oronasal samples, i.e., buccal swabs, oropharyngeal swabs, tonsil scraping samples, oral fluids, or nasal swabs 2 to 14 days post infection (de Carvalho Ferreira et al., 2012; Fernández et al., 2007; Flannery et al., 2020; Grau et al., 2015; Guinat et al., 2014; Howey et al., 2013; Pietschmann et al., 2015).

Classical swine fever virus

CSFV appears in blood (viremia) 2 to 14 days post exposure and is transient. Depending on the assay, detectable levels of CSFV-specific antibody appear in blood and oral fluids 8 to 21 days post exposure (Ganges et al., 2020; Kirkland et al., 2019; Panyasing et al., 2018a,b; Popescu et al., 2019).

CSFV RNA may be detectable in oronasal samples, e.g., buccal swabs, oropharyngeal swabs, tonsil scraping samples, oral fluids, or nasal swabs 2 to 14 days post infection (Dietze et al., 2017; Fukai et al., 2020; Grau et al., 2015; Huang et al., 2017, 2020; Panyasing et al., 2018; Petrini et al., 2017; Popescu et al., 2019; Weesendorp et al., 2009).

Diagnostic Specimens for ASF-CSF Monitored Certification:

Swab samples. Use flocced or spun head synthetic or semi-synthetic swabs (polyester, rayon, nylon) for Oral Swabs and absorbent cotton swabs for Blood Swabs. Commercial virus transport media, phosphate buffered saline (PBS), or physiological (normal) saline may be used. Tubes should have a capacity of at least 5 milliliters and have a secure cap.

Oral swabs for virus detection. Place the swab between the cheeks and teeth and gently pass the swab forward and backward several times, allowing the swab to absorb fluid in the cheek pouch. Swirl the swab vigorously in a tube containing 5 milliliters of transport medium, squeeze excess liquid from the swab while inside the tube, and then dispose of the swab in a biosecure manner. **POOL SWABS SAMPLES FROM UP TO 5 ANIMALS.** Label the tube with barn, pen, and animal ID (if available). Chill (4°C) on ice or under refrigeration.

Blood swabs for virus detection (Carlson et al., 2018; Petrov et al., 2014). Puncture an ear vein, saphenous vein, or the medial caudal vein at the base of the tail with a sterile needle or lancet. Place the swab into tube with transport medium.

Oral fluids for antibody or virus detection. Suspend a length of cotton rope in the pen for ~30 minutes. To recover the sample, remove the rope, place the wet portion of the rope inside a plastic bag, and extract the oral fluid (by hand or wringer). Thereafter, decant the sample into a tube, label the tube with barn, pen, and animal ID (if appropriate), and chill (4°C) on ice or under refrigeration. **DO NOT POOL ORAL FLUIDS** from group/pen-based samples.

Sampling Requirements for ASF-CSF Monitored Certification:

Samples are collected at the production site and submitted to the testing laboratory under the guidance and direction of an officially licensed and accredited veterinarian.

Sampling requirements (specimen type, number of samples, sampling frequency) for ASF-CSF Monitored certification depend on *Production Site Type* and the *ASF-CSF Status* of the U.S., State, or Region (see Tables 1 to 6 below).

Shipment of Samples for ASF-CSF Monitored Certification:

Each tube should be clearly identified with sufficient information to allow traceback to the site, barn, pen, and animal (if appropriate) from which the sample was collected.

Submission information provided with the testing request must include the complete address and premises identification number (PIN) for the production site from which the samples were collected.

Package samples for shipping in compliance with requirements for transport of biological diagnostic materials, e.g., approved package liners and exterior labels. Protect tubes to avoid breakage. If available, use insulated containers and enclose sufficient ice packs to preserve sample quality. In severe cold weather, take precautions to prevent freezing. Place samples in sealed plastic bags to prevent leakage. Pack with absorbent materials to soak up spills should they occur. Refer to published federal guidelines and regulations for details regarding packaging, labeling, and interstate shipment of infectious agents (Title 42 CFR Part 72; Title 49 CRF Part 173.386-388).

Choose a method of transportation that will ensure timely delivery to the laboratory.

Testing and Reporting:

Testing of samples for ASF-CSF Monitored certification

Screening tests in the ASF-CSF Monitored certification program must be performed in NAHLN laboratories certified to conduct ASF-CSF testing. Test methods (assays) used must be equivalent or comparable to USDA NAHLN ASF-CSF approved test methods (assays), be well-supported by test validation and personnel training records in accordance with quality assurance standards set-forth by the American Association of Veterinary Laboratory Diagnosticians, and approved by the US SHIP Sampling and Testing Technical Committee.

ASFV and CSFV test results are to be accessible (reported) to the Submitting Veterinarian, Program Participant, US SHIP Official State Agency, and the appropriate State Animal Health Officials and USDA Veterinary Services Agencies.

In the case of non-negative test results, consistent with existing protocols at USDA NAHLN labs routinely conducting ASF-CSF surveillance testing, samples with nonnegative test results will be forwarded to the USDA Foreign Animal Disease Diagnostic Laboratory (FADDL) for additional (confirmatory) testing. Simultaneously, the testing laboratory will be responsible for contacting the appropriate State and Federal animal health officials to initiate a Foreign Animal Disease Investigation and collection of additional samples for official ASF-CSF testing (confirmatory) purposes.

Table 1. Sampling and Testing Requirements for Boar Stud Production Sites.¹

ASF/CSF Monitored certification sampling requirements for Boar Stud production sites				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Risk Level	Specimen Type(s)	I or A ²	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Level 1 US Negative (Peace Time)	Oral Swab Blood Swab Oral Fluids	I I I	Research Period: No Sampling and Testing Requirements in Year 1 ⁴			
Level 2 US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I I	2X per Month ³	10	2	-
Level 3 US Positive, Immediately After Incursion, or if State or Region Positive. (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I I	Weekly ³	10	2	-
Production site in Control Area	Outside the scope of US SHIP					

¹ Boar Stud Production Site Type Definition: Production site with mature boars (inventory) that distribute semen to other production sites. (e.g., boar stud, with or without onsite isolation)

² I = Individual Sample, A = Aggregate (Group or Pen) Sample

³ Do not collect boar "foam". Select sick, off-feed, or poor-doing boars for sampling. Do not sample deads.

⁴ **Research period:** The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

Table 2. Sampling and Testing Requirements for Breeding Herd Production Sites.¹

<div style="background-color: black; color: white; padding: 5px; font-weight: bold;"> ASF/CSF Monitored certification sampling requirements for Breeding Herd production sites </div>				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Risk Level	Specimen Type(s)	I or A ²	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Level 1 US Negative (Peace Time)	Oral Swab Blood Swab Oral Fluids	I I I	Research Period: No Sampling and Testing Requirements in Year 1 ⁴			
Level 2 US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I I	Monthly ³	10	2	-
Level 3 US Positive, Immediately After Incursion, or if State or Region Positive. (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I I	2x per Month ³	10	2	-
Production site in Control Area	Outside the scope of US SHIP					

¹ Breeding Herd Production Site Type Definition: Production site with breeding females and house ≥ 1,000 breeder or feeder swine. (e.g., breed-to-wean, breeding/gestation or farrowing only, with or without on-site gilt isolation/grow-out).

² I = Individual Sample, A = Aggregate (Group or Pen) Sample

³ Collect collect oral swab, oral fluid, or blood swab samples from individual sows in gestation, farrowing, GDU, and/or isolation facilities. Select sick, off-feed, or poor-doing sows for sampling. Do not sample deads.

⁴ **Research period:** The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

Table 3. Sampling and Testing Requirements for Grow Pig Production Sites.¹

<div style="background-color: black; color: white; padding: 5px; font-weight: bold;"> ASF/CSF Monitored certification sampling requirements for Growing Pigs production sites </div>				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Risk Level	Specimen Type(s)	I or A ²	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Level 1 US Negative (Peace Time)	Oral Swab Blood Swab Oral Fluids	I I A	Research Period: No Sampling and Testing Requirements in Year 1 ⁵			
Level 2 US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ^{3,4}	10	2	2
Level 3 US Positive, Immediately After Incurion, or if State or Region Positive. (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ^{3,4}	20	4	1 per 500 pigs with maximum of 8 per site
Production site in Control Area	Outside the scope of US SHIP					

¹ Growing Pig Production Site Type Definition: Production site with ≥ 1,000 feeder swine (nursery, grower, or finisher).

² I = Individual Sample, A = Aggregate (Group or Pen) Sample

³ **Individual Animal Sampling Option:** Collect oral swab samples from individual pigs in nursery, grower, and/or finisher facilities.

⁴ **Aggregate (Group or Pen) Sampling Option:** Collect oral fluid samples (one per pen) from nursery, grower, and/or finisher pigs. Select pens with sick, off-feed or poor-doing pigs. Do not pool oral fluids.

⁵ **Research period:** The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

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Table 4. Sampling and Testing Requirements for Farrow-to-Feeder or Farrow-to-Finish Production Sites.¹

<div style="background-color: black; color: white; padding: 5px; text-align: center;"> ASF/CSF Monitored certification sampling requirements for Farrow to Feeder/Farrow to Finish production sites </div>				Sampling & Testing Requirements (Alternative Options)			
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)	
Risk Level	Animal Type	Specimen Type(s)	I or A ²	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Level 1 US Negative (Peace Time)	Breeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Research Period: No Sampling and Testing Requirements in Year 1 ⁶			
	Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I A				
Level 2 US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing Outside of Control Areas)	Breeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ³	10	2	-
	Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ^{4,5}	10	2	2
Level 3 US Positive, Immediately After Incursion, or if State or Region Positive. (All US SHIP Testing Outside of Control Areas)	Breeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ³	10	2	-
	Feeder Swine	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ^{4,5}	20	4	1 per 500 pigs with maximum of 8 per site
Production site in Control Area	Breeder Swine	Outside the scope of US SHIP					
	Feeder Swine						

¹ Farrow to Feeder or Farrow to Finisher Production Site Type Definition: Production site with breeding females, grow feeder swine for purposes other than breeding stock replacement for this particular farm site, and house ≥ 1,000 breeder or feeder swine.

² I = Individual Sample, A = Aggregate (Group or Pen) Sample

³ **For Breeder Swine: Individual Animal Sampling Option:** Collect oral swab samples from individual pigs in nursery, grower, and/or finisher facilities. Select sick, off-feed, or poor-doing pigs for sampling. Do not sample deads.

⁴ **For Feeder Swine: Individual Animal Sampling Option:** Collect oral swab samples from individual pigs in nursery, grower, and/or finisher facilities.

⁵ **Aggregate (Group or Pen) Sampling Option:** Collect oral fluid samples (one per pen) from nursery, grower, and/or finisher pigs. Select pens with sick, off-feed or poor-doing pigs. Do not pool oral fluids.

⁶ **Research period:** The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

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Table 5. Sampling and Testing Requirements for Small Holding Production Sites.¹

ASF/CSF Monitored certification sampling requirements for Small Holding production sites				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Risk Level	Specimen Type(s)	I or A ²	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Level 1 US Negative (Peace Time)	Oral Swab Blood Swab Oral Fluids	I I I or A	Research Period: No Sampling and Testing Requirements in Year 1 ⁵			
Level 2 US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I I or A	Monthly ^{3,4}	5	1	1 per 500, or 2 if > 500 pigs
Level 3 US Positive, Immediately After Incursion, or if State or Region Positive. (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I I or A	Monthly ^{3,4}	10	2	1 per 500, or 2 if > 500 pigs
Production site in Control Area	Outside the scope of US SHIP					

¹ Small Holding Production Site Type Definition: Production sites with ≥ 100 and < 1,000 breeder or feeder swine.

² I = Individual Sample, A = Aggregate (Group or Pen) Sample

³ **Individual Animal Sampling Option:** Collect oral swab, oral fluid, or blood swab samples from individual breeding swine, or oral swab samples from pigs in nursery, grower, and/or finisher facilities. Select sick, off-feed, or poor-doing breeding swine or pigs for sampling. Do not sample deads.

⁴ **Aggregate (Group or Pen) Sample Option:** Collect oral fluid samples (one per pen) from breeding swine, nursery, grower, and/or finisher pigs. Select pens with sick, off-feed or poor-doing pigs. Do not pool oral fluid samples.

⁵ **Research period:** The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

Table 6. Sampling and Testing Requirements for Non-Commercial Production Sites.¹

ASF/CSF Monitored certification sampling requirements for Non-Commercial production sites				Sampling & Testing Requirements (Alternative Options)		
				Option 1 Individual Only		Option 2 Aggregate Only (Group or Pen)
Risk Level	Specimen Type(s)	I or A ²	Frequency / Timing of Sampling	# of Individuals	# of Pools (Groups of up to 5)	# of Samples
Level 1 US Negative (Peace Time)	Oral Swab Blood Swab Oral Fluids	I I A	Research Period: No Sampling and Testing Requirements in Year 1 ⁵			
Level 2 US Positive, Operations Normalizing, and State or Region Negative (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I A	Quarterly ^{3,4}	5	1	1
Level 3 US Positive, Immediately After Incursion, or if State or Region Positive. (All US SHIP Testing Outside of Control Areas)	Oral Swab Blood Swab Oral Fluids	I I A	Monthly ^{3,4}	5	1	1
Production site in Control Area	Outside the scope of US SHIP					

¹ Non-Commercial Production Site Type Definition: Production sites with < 100 breeder or feeder swine.

² I = Individual Sample, A = Aggregate (Group or Pen) Sample

³ **Individual Animal Sampling Option:** Collect oral swab samples from individual breeder or feeder swine. Select sick, off-feed, or poor-doing pigs for sampling. (Optional)

⁴ **Aggregate (Group or Pen) Sampling Option:** Collect oral fluid samples (one per pen) from pens of feeder or breeder pigs. Select pens with sick, off-feed or poor-doing pigs. Do not pool oral fluids. (Optional)

⁵ **Research period:** The first 12-months of the testing related activities will serve to develop informational and training materials, further modeling of disease spread and sensitivity of detection across herds and regions, and to conduct an expanded negative-cohort study of commercially available ASF-CSF PCR assays.

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Traceability

Scope and Purpose of Traceability for US SHIP ASF-CSF Monitored Certification:

Accurate premises level identifying information and the ability to track and trace inter-premises movement of live swine and swine germplasm (semen or embryos) in a scalable manner are foundational elements of emergency disease preparedness and response. These items are also the building blocks necessary for an entity to capably represent or speak to the health status of a given supply chain or legally recognized area or region.

US SHIP will provide program participants and participating states a robust and sustainable mechanism for keeping swine production premises level information accurate and current with the US SHIP Official State Agency (e.g., knowledge of the farm sites and slaughter facilities that exist, appropriate contact information, and where such operations are located in their respective states).

US SHIP also aims to enhance participant and participating states ability to readily generate and/or capture inter-premises swine movement information (live swine and swine germplasm) electronically on an as needed basis.

In the event of an introduction of ASF or CSF into the US, pending location and scale of outbreak, program participants may need to provide swine movement information in an electronic format (e.g., prescribed CSV or Excel file) to the appropriate veterinary medical official agencies (State Animal Health Official) or the US SHIP Official State Agency. US SHIP will provide a platform whereby program participants will have developed and maintained such capabilities.

Traceability Requirements for US SHIP ASF-CSF Monitored Certification:

Premises Level Information:

Premises level demographic information for each participating premises is to be complete, accurate, current, and on-file with the US SHIP Official State Agency in which the premises is located.

The minimum required demographic information to be recorded for each premises is:	
<input checked="" type="checkbox"/> Premise Identification Number (PIN)	<input checked="" type="checkbox"/> Site Owner Contact Information
<input checked="" type="checkbox"/> Swine Owner Contact Information	<input checked="" type="checkbox"/> Common Name of Site
<input checked="" type="checkbox"/> Premise Type (Boar Stud, Breeding Herd, Farrow-Feeder/Finish, Growing Pig, etc)	<input checked="" type="checkbox"/> Expected Site Capacity (Number of Breeding Swine and/or Growing Pigs)
<input checked="" type="checkbox"/> Site Location Information: Latitude and Longitude 911 Street Address, if one has been assigned.	<input checked="" type="checkbox"/> Date of initial enrollment of the site in US SHIP, or date of first usage of the site by current swine owner.
<input checked="" type="checkbox"/> Date of last usage of the site by swine owner (if applicable)	

Swine Movement Information:

Participants are to maintain records of the intrastate and interstate movements of live swine into and out of each participating premises.

Participants must demonstrate competency in providing at least 30 days of movement information electronically in a common format (e.g., a prescribed CSV file) to the US SHIP Official State Agency in a timely manner (e.g. <72 hours - updated Sept 1, 2021).

For participants with multiple participating premises within a given state, such competency can be demonstrated on a site-by-site basis or en-masse.

The minimum information required to be recorded for each movement is:		
<input checked="" type="checkbox"/> Date of movement	<input checked="" type="checkbox"/> Origin State	<input checked="" type="checkbox"/> Origin PIN
<input checked="" type="checkbox"/> Destination State	<input checked="" type="checkbox"/> Destination PIN	<input checked="" type="checkbox"/> Head in movement
<input checked="" type="checkbox"/> Animal type in movement		

Semen Movement Information:

Boar stud premises participants are to maintain records of the intrastate and interstate movements of semen distributed out of each participating premises.

Participants must demonstrate competency in providing at least 30 days of movement information electronically in a common format (e.g., a prescribed CSV file) to the US SHIP Official State Agency in a timely manner (e.g. <72 hours - updated Sept 1, 2021).

For participants with multiple participating premises within a given state, such competency can be demonstrated on a site-by-site basis or en-masse.

The minimum information required to be recorded for each movement is:		
<input checked="" type="checkbox"/> Date of movement	<input checked="" type="checkbox"/> Origin State	<input checked="" type="checkbox"/> Origin PIN
<input checked="" type="checkbox"/> Destination State	<input checked="" type="checkbox"/> Destination PIN	<input checked="" type="checkbox"/> Number of units in shipment

Animal Identification:

Certified ASF-CSF monitored participants must comply with existing state and federal laws regarding animal/group/lot identification.

Adjustments to Traceability Reporting Standards:

Upon changes in the US SHIP risk level classifications pending the scale of the outbreak and location of the participants relative to the outbreak, program participants may need to be able to readily provide swine movement information in an electronic format (e.g., prescribed CSV or Excel

file) to the appropriate US SHIP Official State Agency on an as needed basis.

Producers: Such swine or germplasm movement information may be needed for assisting in tracing disease investigations efforts and/or to facilitate animal movement permitting needs that may arise.

Packers (Slaughter facilities): Such information may be needed as a means to verify the pigs being harvested are coming from certified ASF-CSF monitored participants and/or areas and regions that are free of ASF-CSF.

Biosecurity

Scope and Purpose of Biosecurity for US SHIP ASF-CSF Monitored Certification:

Biosecurity is central to prevent the introduction and spread of ASF and CSF into US swine herds and to mitigate risks of disease transmission between herds in the event that the diseases enter the country.

The US SHIP biosecurity standards aim to leverage knowledge derived from various risk analysis that have quantified the risk of ASF/CSF introduction into the US, the collective swine industry knowledge and experience accumulated over the years, and on-going knowledge generated through research and practice.

The Secure Pork Supply (SPS) plan and the NPIP biosecurity plans provide an excellent foundation of biosecurity practices. In synergy with these practices, US SHIP has developed biosecurity guiding principles for comprehensive site plans that support the implementation of program standards (See Appendix I below for reference purposes). US SHIP seeks input from program participants to proactively identify areas where specific standards, or actionable requirements, can be implemented at the site level.

Longer-Term Aims of US SHIP Biosecurity Standards:

1. Mitigate risks of the introduction of ASF/CSF into the country – prevention!
2. Enhance FAD preparedness and reduce the impact of recurring endemic diseases of high consequence through the sustainable advancement of sanitary standards/biosecurity practices that mitigate disease spread into and between farms.
3. Mitigate risks of disease spread within and from points of concentration and sales.

While advancing practices that mitigate risks of disease introduction into the country is the top priority, proactively developing and implementing an industry-informed and functional system prior to an ASF-CSF incursion will also enable participants and states to readily scale up the necessary testing to demonstrate freedom of disease across specified supply chains, areas, regions, and market segments throughout a Response and Recovery Phase.

Biosecurity practices that mitigate widespread indirect transmission of disease through unknowingly contaminated fomites, working and seamless systems of traceability, and well understood, workable, and effective disease surveillance are each critical aspects of animal disease preparedness and response.

The US SHIP ASF-CSF Monitored Certification Program aims to play a primary role in helping support the responsible movement of swine and continuity of business and trade *outside of ASF-CSF control areas*. Implementing uniform and effective systems for early detection and demonstrating evidence of freedom of disease are foundational elements needed to support ongoing interstate and international commerce over the course of a response and recovery period.

Whereas the sampling and testing requirements center on mitigating the risks of disease transmission through live animal movement, biosecurity practices are the primary means for mitigating risks of disease transmission through exposing susceptible pigs to unknowingly contaminated fomites (e.g., livestock trailers, contaminated feed ingredients, dead stock, equipment, and personnel).

Finding practical and sustainable means towards advancing current standards of practice that mitigate the indirect transmission of disease between farms and broadly across areas and regions is unquestionably foundational towards improving the current state of preparedness. The same systems, practices, and structure advanced to mitigate trade impacting disease related market risks, would also better position the US pork industry to make stepwise progress toward reducing the impact of recurring endemic diseases of high consequence.

As mentioned earlier, in the case of trade impacting diseases, safeguarding the health of all pigs across a given supply chain, area, region, and country is particularly important.

There is precedent for willing trading partners to recognize specific areas (regionalization) as being free of specified diseases within an affected country. Recognizing the health status of commercial livestock by region (counties, states, or provinces) has long been a critical component of making stepwise progress over the course of large-scale disease control or eradication efforts domestically and internationally.

Due to the great diversity that exists across the US pork industry, the complexities associated with the broad topic that is “biosecurity”, the start-up nature of this US SHIP pilot project, and the need for having standards that are both relevant and practical across the breadth of industry participants, US SHIP takes a targeted approach to biosecurity with an initial focus on producer influenced standards of practice that aim to mitigate risks of ASF/CSF entry into the country. Establishing a user-friendly and functional structure that enables a rapid start-up and encourages participation across the full-spectrum of US pork industry participants is also a critically important first-step towards achieving the longer-term goals and objectives of this endeavor. The scope of the US SHIP Biosecurity Standards for Year 1 will be limited to such items directly controlled or influenced by participating farms or their suppliers and service providers.

Biosecurity Requirements for US SHIP ASF-CSF Monitored Certification:

Feed Supply:

The feeding of swill, garbage, or table waste that has the potential to include meat products is strictly prohibited.

Personnel:

Permissioned individuals that have recently been exposed to livestock, feral/wild pigs or slaughter facilities in ASF/CSF/FMD positive regions or countries abroad should only visit farms or slaughter facilities in the US after observing a 5-day downtime since arriving in the US, and donning PPE (boots/coveralls, etc.) provided by farm site or slaughter facility being visited.

Enrollment Survey (Biosecurity Practices):

At enrollment, participating premises will complete a survey to provide a simplistic categorization of some of the high-level biosecurity practices being implemented at the premises. Information from this survey is to provide quantitative data to assess current standards of practice across a broad spectrum of program participants.

This survey will focus on identifying on-farm biosecurity practices being implemented and will target the areas of:

- a) Feeding practices
- b) Live-haul transport
- c) Mortality disposal
- d) Housing type
- e) People entry
- f) General sanitation practices at the premises

End of Biosecurity Standards (Year 1) For US SHIP ASF-CSF Monitored.

Appendix I: US SHIP Biosecurity Principles for Comprehensive Site Plans:

Note for clarity: These Biosecurity Principles for Comprehensive Site Plans have been drafted as a reference document highlighting key areas related to biosecurity and best practices / content of comprehensive biosecurity site plans. ***Biosecurity site plans are not being proposed as a Year 1 program standard / requirement for this US SHIP ASF-CSF Monitored Certification.*** Should having biosecurity site plans evolve to be a US SHIP biosecurity program standard for specified types of pork production operations at some point in the future, as is the case with NPIP, such a requirement would be aligned with, and not duplicative efforts to any such site specific plans being recommended in the Secure Pork Supply Plan.

1. Biosecurity Responsibility

With the assistance of the herd veterinarian, the Biosecurity Manager is responsible for the development, implementation, maintenance, training and ongoing compliance with meeting or exceeding the biosecurity standards required for the US SHIP certification(s) held or being pursued. Depending on the type and size of swine operation, the Biosecurity Manager's responsibility could be at the farm, production site, production flow, or company level. The Biosecurity Manager should be knowledgeable in the principles of biosecurity and has the authority to ensure compliance with biosecurity protocols and take corrective action as needed. The Biosecurity Manager, their on-site designee, along with the personnel and caretakers on the farms and production sites are responsible for the implementation of the biosecurity program. The herd veterinarian is responsible for conducting an annual review with the Biosecurity Manager or his/her designee to assess the suitability of the participant's biosecurity program, biosecurity plan, and review of opportunities for improvement and corrective actions.

2. Site-Specific Written Biosecurity Plan

A site-specific written biosecurity plan should be available for each of the farms or sites. With the assistance of the herd veterinarian, the plan is developed and implemented by the Biosecurity Manager. It is reviewed at least annually and whenever the site goes through a change that affects biosecurity (expands, adds a new aspect of the business, etc.). The biosecurity plan clearly defines the scope of the operation and includes biosecurity for other susceptible species kept on the premises. The biosecurity plan includes a description or a labeled premises map identifying the following: site entry, perimeter buffer area (PBA), line of separation (LOS), access point(s), cleaning and disinfection (C&D) areas, designated parking, and carcass disposal/pickup location. The plan indicates vehicle movements (animal transport vehicles, deliveries, etc.) and carcass removal pathways.

3. Training

The biosecurity program should include training materials that cover both farm site-specific procedures as well as premises-wide and/or company-wide procedures as appropriate. All swine owners and caretakers that regularly enter the LOS should complete this training. The training is administered by the herd veterinarian, Biosecurity Manager, or the Biosecurity Manager's designee. The training should be done yearly and be documented. New swine caretakers should be trained as part of the onboarding process. Training records should be retained.

4. Line of Separation (LOS)

The Line of Separation (LOS) is a functional line separating the swine barn(s) and the swine inside from exposure to potential disease sources. Generally, it is defined by the walls of the swine barn with practical deviations to account for entry points, structural aspects, or outside access areas. The site-specific biosecurity plan should describe or illustrate the boundaries of the LOS and clearly outline the procedures to be followed when animals (loading/unloading), caretakers, visitors or suppliers cross it. It is recommended that areas contaminated after loading animals are cleaned and disinfected according to the biosecurity plan. For swine with access to outdoor pens, similar principles for the LOS can be applied for defining and controlling the LOS for each pen. In this circumstance, the walls of the outdoor pens would provide a template for defining the LOS to be used when entering or exiting the pens. For swine with non-enclosed outdoor access, the LOS is recommended but not required. Further, in an emergency disease state where the transmissible disease risk is heightened, it is highly recommended to enclose all swine and enforce a LOS.

5. Perimeter Buffer Area (PBA)

All farms should identify and describe the perimeter buffer area (PBA) in the site-specific biosecurity plan. The perimeter buffer area is a functional zone surrounding the swine barns or swine raising area that separates them from areas unrelated to swine production on that site and/or adjoining properties. It is comprised of the swine barns and swine raising areas as well as nearby structures and high traffic areas involved in the daily function of the swine farm. This would usually include but not be limited to such things as feed bins, manure storage, composting areas, generators, pump rooms, etc. The site-specific biosecurity plan clearly outlines the procedures that caretakers, visitors, or suppliers must follow when entering the PBA and it should be enacted if there is ASF or CSF reported in the country.

6. Personnel

The biosecurity program and/or the site-specific biosecurity plan should include provisions specifically addressing procedures and biosecurity PPE for site-dedicated personnel. The plan should likewise address the procedures and biosecurity PPE for non-farm personnel including sign-in in the entry logbook. The plan should also specify procedures that reduce disease transmission of all personnel including livestock drivers, having had recent contact with other swine or other animal species before crossing the LOS and/or PBA where appropriate.

7. Feral Pigs, Wild Animals, Rodents and Insects

Swine operations should have control measures to prevent contact with and protect swine from feral pigs and other animals (deer, feral pigs, rodents, raccoons, dogs, cats, birds, etc.) and their body excretions as appropriate to the production system. Rodent and fly control programs should be in place and its implementation documented.

8. Equipment and Vehicles.

The biosecurity plan should include provisions that decrease the risk for vehicles and equipment to transmit disease and should include provisions for both non-animal transport and livestock trucks/trailers. Procedures for cleaning, disinfection, drying, scraping and rinsing or restriction of sharing of equipment between sites where applicable should be included. Vehicle access and traffic patterns should be defined in the site-specific biosecurity plan or marked in the site map. For outdoor pig production, vehicles entering an animal area should use procedures to reduce risk of disease transmission.

9. Mortality Disposal

Mortality should be collected daily, stored, and disposed in a manner that does not attract wildlife, rodents, insects or other animals and minimizes the potential for cross-contamination from other facilities or between premises. It is recommended that dead pig disposal be onsite, if possible. Rendering trucks and other vehicles hauling dead animals to a common disposal site should not cross into the LOS or the PBA if applicable. Mortality disposal should be described in the site-specific biosecurity plan.

10. Manure Management

Manure should be removed, stored, and disposed of in a manner to prevent exposure of susceptible swine to disease agents and meets state, local, and the Responsible Regulatory Official's requirements. Onsite manure storage should limit attraction of wild animals, birds, rodents, and insects.

11. Replacement Swine

Replacement swine and semen should be sourced from health-monitored herds which are in compliance with US SHIP guidelines. Biosecurity protocols should be in place for equipment and personnel involved in the transport and delivery of replacement swine and semen.

12. Water Supplies

It is recommended that drinking water or water used for evaporative cooling be sourced from a contained supply such as a well or municipal system. If drinking water comes from a surface water source, water treatment is recommended to reduce the level of disease agents. If water treatment is not possible, a risk analysis should be performed to determine actions needed to mitigate risks.

13. Feed and Bedding

Feed, feed ingredients, and bedding should be delivered, stored and maintained in a manner that limits exposure to and contamination by wild animals, birds, rodents, and insects. Feed spills outside of the LOS should be cleaned up and disposed in a timely fashion. Feed and ingredients should be sourced from suppliers that follow biosecurity practices to decrease the risk of ASF and CSF introduction into the feed. Plate waste containing meat (e.g swill feeding) is not allowed.

14. Reporting of Elevated Morbidity and Mortality

Elevation in morbidity and/or mortality above expected levels should be reported to the herd veterinarian. Actions should be taken to rule out reportable disease agents as deemed appropriate by the herd veterinarian.

15. Auditing

Audits should be conducted at least once every two years or a sufficient number of times during that period by the Official State Agency to ensure the participant is in compliance. Each audit should require a review of the biosecurity plan, the herd veterinarian's annual review, and the Biosecurity Manager's overall assessment or statement of the overall compliance with meeting or exceeding the biosecurity standards required for the US SHIP certification(s) held or being pursued.

US SHIP Classifications, Delegate Allocation, and Governance

US SHIP Classifications:

US SHIP Classifications: (5 groupings for delegate allocation purposes)

Commercial Breeding Herd Operations:	Operations that have a production site with $\geq 1,000$ breeder females or ≥ 50 mature boars.
Commercial Growing Pig Operations:	Operations that have a production site with $\geq 1,000$ feeder swine.
Commercial Slaughter Facility Operations:	Operations that have a facility that slaughters $\geq 100,000$ pigs per year.
Small Commercial Herd or Slaughter Facility Operations:	Operations that have a: i.) farrow-to-finish or farrow-to-feeder production site with $< 1,000$ breeding females, ii.) production site with ≥ 100 and $< 1,000$ feeder or breeder swine or iii.) USDA or State Inspected slaughter facilities slaughtering $< 100,000$ pigs per year.
Non-commercial Operations:	Operations that have a production site with < 100 pigs.

US SHIP Classifications are important as it relates to ensuring appropriate representation from the various segments of the US pork industry and in the delegate allocation process.

Such US SHIP Classifications (and associated definitions) also create clarity for the states as to “who to ask” when seeking industry stakeholder volunteers to serve as delegates in representing the interests of a particular “Classification or Segment” of the industry in the US SHIP House of Delegates.

However, there will not be any “classification-specific” votes cast at the US SHIP inaugural House of Delegates Meeting to be held on August 23-24, 2021 in Des Moines, IA.

Approach Used for US SHIP Delegate Allocation:

Formula based approach = (Base Allocation & Distribution of At Large Delegates)

Brief Description of Methodology Used For Delegate Allocation:

This formula-based approach uses a combination of a baseline allocation of delegates to all participating states, as well as the generation and subsequent distribution of a pool of At-Large Breeding Herd and Growing Pig delegates based upon the percentage of Breeding Swine and Growing Pigs (respectively) participating in US SHIP that are located in the state.

The formula-based approach is structured such that the number of At-Large delegates increase in direct proportion to the number of states participating in the US SHIP.

Detailed Description of Formula Based Approach with Explanation:

1. Participating states were allotted one delegate (vote) for each of the US SHIP Classifications of which they have active industry participants of that type (Classification) operating in their state.

For example:

- a. If a state has all 5 of the Classifications operating in their state, they get 5 delegates, 1 delegate assigned to each of the 5 Classifications.
- b. If a state only has 2 of the Classifications operating in their state, they get 2 delegates, 1 to each respective Classification.

2. A pool of At-large delegates was generated for allocation to the states. Two At-large delegates (1 Breeding Herd delegate and 1 Growing Pig delegate) was generated for each state expressing their interest in participating in the US SHIP House of Delegates.

For example:

- a. If 25 states participate, a pool of 25 Breeding Herd and 25 Growing Pig At-Large delegates (votes) would be generated for allocation.

3. The pool of At-large delegates will be allocated to states as a percentage of all Breeding Swine and Growing Pigs (respectively) participating in US SHIP that are located in a given state.

For example:

- a. Using example above of 25 participating states: If a state had 4% of the Breeding Swine inventory and 8% of the Growing Pig inventory among participating states, they would be allocated 1 additional Breeding Herd delegate and 2 additional Growing Pig delegates.

Since US SHIP currently has no participants, USDA inventory data of Breeding Swine and Growing Pigs (as opposed to participating inventory) was used as the starting point for allocating delegates to states for this inaugural US SHIP House of Delegates meeting.

Looking forward, the site capacity (inventory) numbers of Breeding Swine and Growing Pigs (respectively) actually participating and certified in US SHIP will be used, as opposed to USDA inventory data in this formula-based delegate allocation process.

Delegate Allocation for Inaugural US SHIP HOD:

As of July 1, 2021, a total of 28 states had expressed interest in participating in the US SHIP pilot project. The formula-based approach (described above) was applied using the 28 states and

December 2020 USDA Hogs and Pigs Report to derive the number of delegates to be allocated to each state.

Table 1 below outlines the number of voting delegates allocated to the 28 states that have expressed interest in participating this inaugural US SHIP HOD.

Each state is also being provided the opportunity to invite and register 2 non-voting guests to attend and actively participate in the US SHIP HOD.

Table 1. Summary of the delegate allocation for inaugural US SHIP HOD.

28 states have demonstrated interest in the US SHIP pilot

State	28 states have demonstrated interest in the US SHIP pilot					Total
	Non-commercial	Small commercial	Breeding herd	Growing	Slaughter	
Arizona	1	1	1	1	0	4
Arkansas	1	1	1	1	0	4
California	1	1	0	1	1	4
Colorado	1	1	2	1	0	5
Illinois	1	1	3	3	1	9
Indiana	1	1	2	3	1	8
Iowa	1	1	5	10	1	18
Kansas	1	1	2	2	1	7
Kentucky	1	1	1	1	1	5
Michigan	1	1	2	1	1	6
Minnesota	1	1	3	4	1	10
Missouri	1	1	3	2	1	8
Montana	1	1	1	1	0	4
Nebraska	1	1	3	2	1	8
North Carolina	1	1	5	4	1	12
North Dakota	1	1	1	1	0	4
Ohio	1	1	2	2	1	7
Oklahoma	1	1	3	2	1	8
Oregon	1	1	0	0	1	3
Pennsylvania	1	1	2	1	1	6
South Carolina	1	1	1	1	0	4
South Dakota	1	1	2	2	1	7
Tennessee	1	1	1	1	1	5
Texas	1	1	2	1	1	6
Utah	1	1	1	1	0	4
Virginia	1	1	0	1	1	4
Wisconsin	1	1	1	1	1	5
Wyoming	1	1	1	1	0	4
Total	28	28	51	52	20	179

Other US SHIP Governance Items Related to Delegate Allocation:

Voting delegates representing each participating state will be appointed by each participating state's pork producer association. If a participating state does not have an active pork producer association, delegate selection will be deferred to the respective State Animal Health Official or Department of Agriculture.

The State Animal Health Official or their designee is to serve as one of the voting delegates among their respective state's delegation at the US SHIP House of Delegates.

- This is not an additional delegate and ***does not*** have any implication on the number of delegates being allocated for use by participating states.
- This language is included simply to clarify the importance of the SAHO's (and/or respective State Department of Agriculture's or Board of Animal Health's) role and engagement with this US SHIP pilot project in their respective state.
- The SAHO's or their designee's engagement in US SHIP and the US SHIP House of Delegates process is highly important.

Delegates must be present to vote at the US SHIP House of Delegates.

Individual delegates attending the US SHIP House of Delegates cannot cast more than one vote or cast votes on other delegates' behalf (i.e., one person/delegate = one vote).

States are not required to have representation or be present at the US SHIP House of Delegates to participate in the US SHIP.

Definitions of US SHIP Program Standards vs Resolutions:

- US SHIP Program Standard: Requirement to be met or exceeded by enrolled producer and packer sites to be certified in the US SHIP pilot as approved by majority vote at the US SHIP House of Delegates.
- US SHIP Resolution: Working group or project approved by majority vote at the US SHIP House of Delegates to further explore specific issues for consideration for potential future standards.

Approval of Standards and Resolutions by simple majority (>50%) of votes cast.

Amendments to both Standards and Resolutions can be brought forth as long as such amendment remains within the scope under consideration.

Motions for new Standards which have not been vetted and previously circulated to delegates will not be considered for vote but instead tabled for further review and consideration.

New Resolutions must be submitted by August 16 for consideration at the 2021 HOD.

Terminology and Definitions

A glossary of terminology and definitions has been included for completeness.

These terms/definitions are from a number of USDA APHIS references, as well as those specifically derived to meet the needs of this US SHIP pilot project endeavor.

Administrator. The Administrator, Animal and Plant Health Inspection Service, or any other employee of the Animal and Plant Health Inspection Service delegated to act in the Administrator's stead.

African swine fever (ASF). A contagious, infectious, and communicable disease of domestic and feral swine caused by infection with African swine fever virus (ASFV).

Aggregate sample. A single sample collected at one specific time and location potentially containing diagnostic targets from two or more animals. Examples of aggregate samples include processing fluids, pen-based oral fluids, and environmental samples, e.g., air or water.

Antibody. Proteins produced by the immune system in response to a foreign antigen, such as infection with a bacteria or virus.

APHIS. The Animal and Plant Health Inspection Service of the U.S. Department of Agriculture.

Approved laboratory. Any National Animal Health Laboratory Network (NAHLN) Veterinary Diagnostic Laboratory (VDL) approved to perform ASFV and CSFV testing.

ASF-CSF monitored production site. A production site in compliance with US SHIP certification requirements.

Backyard swine. Domestic swine raised for food production in smaller numbers than commercial swine operations (<1,000 per premise) and kept either in a housing facility with solid-sided walls, or with access to the outdoors surrounded by a fence or other barrier. Backyard swine can also be transitional swine.

Biosecurity. A set of management and physical measures designed to reduce the risk of the introduction, establishment, and spread of pathogens in and between herds.

Breeder swine. Sexually intact swine over 6 months of age.

Breeding herd. Inventory of breeder swine, i.e., open, mated, or lactating females and boars (also see US SHIP Production Sites Types and Classifications).

Carrier (carrier state). An individual that harbors ASFV or CSFV in the absence of discernible clinical disease and serves as a potential source of infection.

Certified ASF-CSF monitored. US SHIP participants shown to be in compliance with the biosecurity, traceability and surveillance requirements established through the House of Delegates.

Classical swine fever (CSF). A contagious, infectious, and communicable disease of domestic and feral swine caused by infection with classical swine fever virus (CSFV).

Classification. A designation earned by participation in a Plan program.

Clinical signs. Objective evidence of a disease perceptible to the observer. (Note: subjective sensations reported by a human are “symptoms”).

Commercial production swine. Swine that are continuously managed for pork production on production sites sufficient to prevent exposure to either transitional production swine or feral swine (also see US SHIP classifications).

Common ground. The ground, areas, buildings or equipment communally shared by any specific group or groups of livestock.

Compartment. Any defined animal subpopulation contained in one or more establishments under a common biosecurity management system for which surveillance, control, and biosecurity measures have been applied with respect to a specific disease.

Confirmed case. Any animal determined to be infected with ASFV or CSFV by an official epidemiologist and whose diagnosis is supported by official ASFV or CSFV test results.

Cooperating State Agency. Any State authority recognized by the Department to cooperate in the administration of the provisions of the program. This may include the State animal health authority or the Official State Agency.

Department. The United States Department of Agriculture.

Direct shipment. Movement without unloading en route, without contact with swine of lesser ASFV status, and without contact with ASFV-infected or ASFV-exposed livestock.

ELISA (enzyme-linked immunosorbent assay). An assay designed to detect pathogen-specific antibody or antigen.

Embryo. The initial stages of development of an animal, after collection from the natural mother and while it is capable of being transferred to a recipient dam, but not after it has been transferred to a recipient dam.

Epidemiological unit. A group of animals with a defined epidemiological relationship that share approximately the same likelihood of exposure to a pathogen either because they share a common environment (e.g., animals in a barn or pen), or because of common management practices.

Exposed swine. Any swine in contact with equipment, personnel, supplies, feedstuffs, or any article contaminated with ASFV or CSFV, or any swine infected with ASFV or CSFV, including all swine in a known infected herd.

Farm of origin. A production site where swine were farrowed or on which they have resided for at least 30 consecutive days immediately prior to movement.

Farrow. Birth of one or more live or dead piglets on or after the 110th day of pregnancy, i.e., parturition.

Feeder swine. Weaned pigs under 6 months of age (nursery, grower, finisher stages) that are not slaughter swine.

Feral or wild swine. Free-roaming swine.

Gestation. Period between conception and farrowing during which time the embryo or fetus develops.

Herd. A group of livestock under the same management system that are able to mix. Animals in a herd share common risk factors for disease, so the distribution of disease within the herd is assumed to be relatively homogenous (Cameron and Baldock, 1998). Each segregated group of swine on an individual premises, i.e., a building or room, is considered a separate herd (USDA: APHIS, 2003). See epidemiological unit.

Incidence. A rate, with the number of new cases of the specified disease during a defined period of time as the numerator and the number of individuals in the population at risk as the denominator.

Incubation period. The period between the introduction of the pathogenic agent into the animal and the occurrence of the first clinical signs of the disease.

Index case. The first confirmed case of ASF or CSF in domestic or feral swine.

Infected swine. Any swine determined to be infected with ASFV or CSFV by an official epidemiologist and whose diagnosis is supported by official ASFV or CSFV test results.

Infective period. Period during which the infected pig can be a source of ASFV or CSFV for other pigs.

Interstate swine movement report. A paper or electronic document signed by a producer moving swine giving notice that a group of animals is being moved across State lines in a swine production system.

Interstate. From one State into or through any other State. Interstate movement of animals affected with African swine fever or classical swine fever or any other communicable foreign disease not known to exist in the United States is prohibited.

Intrastate. Within a State.

Isolation. Separation of swine by a physical barrier in such a manner that one pig does not have access to an isolated pig's body, excrement, or discharges of another pig; does not share a building with a common ventilation system; and is not within 10 feet of another pig.

Known infected herd. Any herd in which any swine have been determined to be infected with ASFV or CSFV by an official epidemiologist.

Litter. Piglets born to, or fostered onto, a sow.

Meat juice. The serosanguinous fluid recovered from muscle tissues (meat) after it is frozen and then allowed to thaw.

Monitor. The systematic, ongoing collection and assessment of health data in a population.

Monitored negative feral swine population. Feral swine originating from areas that have been geographically defined and under continuous monitoring with no evidence of infection and classified by the ASFV/CSFV epidemiologist as a monitored negative feral swine population.

Moved. Shipped, transported, or otherwise moved; or delivered or received for movement by land, water, or air.

NAHLN. The National Animal Health Laboratory Network consists of Federal, State, and university-associated animal health laboratories within the United States.

Non-commercial farm sites. Sites with fewer than 100 pigs. (also see US SHIP Production Sites Types and Classifications)

Non-commercial production swine. All swine that do not fit the definition of commercial production swine.

Nucleic acid. Macromolecules, either DNA or RNA, that carry genetic information.

Official ASFV or CSFV test. Any test for the diagnosis of ASFV or CSFV approved by the Administrator and conducted in a laboratory approved by the Administrator to determine the presence or absence of ASFV or CSFV antibody or nucleic acid.

Official epidemiologist. A State or Federal veterinarian designated by the State animal health official and veterinarian in charge to investigate and diagnose suspected ASFV or CSFV in livestock.

Official State Agency. The State authority recognized by the Department to cooperate in the administration of the Plan.

Oral fluid. A fluid mixture of saliva and oral mucosal transudate collected by use of an absorptive device.

Owner. The person or legal entity with legal or rightful title.

Outbreak. The detection of one or more ASFV- or CSFV-positive swine on a premises.

Pathogen. Infectious organism capable of causing disease.

Pathogenic. Capable of producing disease.

Pathogenicity. The quality or state of being capable of causing disease. Virulence is a measure of the degree of pathogenicity.

PCR. Polymerase chain reaction - an assay designed to detect nucleic acid.

Permit. An official document issued for and prior to the interstate shipment of ASFV- or CSFV-infected or -exposed swine by a Veterinary Services representative, State representative, or accredited veterinarian, stating: (1) the number of swine to be moved, (2) the purpose for which the swine are to be moved, (3) the points of origin and destination, (4) the consignor and consignee, and (5) additional information required by applicable State and Federal regulations.

Plan. The provisions of the United States Swine Health Improvement Plan (US SHIP) describing the requirements for achieving ASF-CSF Monitored Certification.

Plasma. The liquid portion of unclotted blood containing red cells, white cells, and platelets.

Pooled sample. A sample created by combining individually collected samples, often in equal portions, prior to diagnostic testing.

Premises designations used in ASFV and CSFV incidence response

At-risk premises. Within the infected zone or buffer zone, premises with swine, none of which is exhibiting clinical signs compatible with ASF or CSF. At risk premises may move animals or products within the control area by permit.

Contact premises. Within the infected zone or buffer zone, premises with swine that may have been exposed to ASFV or CSFV, either directly or indirectly, including but not limited to exposure to animals, animal products, fomites, or people from infected premises.

Free premises. Premises in a free area, i.e., outside of a control area, and not a contact or suspect premises.

Infected premises. Within the infected zone, a premises where a presumptive ASF or CSF positive case or confirmed positive case exists based on laboratory results, compatible clinical signs, case definition, and international standards.

Monitored premises. Within the infected zone or buffer zone, a premises that demonstrates it is not an infected premises, a contact premises, or a suspect premises. Monitored premises can move animals or products out of the control area by permit.

Suspect premises. Premises under investigation due to the presence of susceptible animals and clinical signs compatible with ASF or CSF.

Premises identification number (PIN). A nationally unique number assigned by a State, Tribal, and/or Federal animal health authority to a premises that is, in the judgment of the State, Tribal, and/or Federal animal health authority a geographically distinct location from other premises.

Premises. A location where swine are raised, housed, or pass through during commerce.

Prevalence. A proportion, with the number of cases of the specified disease at a specific point in time as the numerator and the number of individuals in the population as the denominator.

Processing fluid. The serosanguinous fluid recovered from tissues (testicles and/or tails) collected at the time of pig castration and tail docking.

Production site. A geographically definable area that includes pork production facilities and ancillary structures under common ownership or management systems and the surrounding space within a 100-foot perimeter (also see US SHIP Production Sites Types and Classifications).

Program. Management, sanitation, testing, and monitoring procedures which, if complied with, will qualify, and maintain qualification for ASF-CSF Monitored Certification status.

Recognized slaughtering establishment. A slaughtering establishment operated under the provisions of the Federal Meat Inspection Act (21 U.S.C. 601 et seq.) or a State-inspected slaughtering establishment (also see US SHIP Production Sites Types and Classifications).

Region. A land area identified by geological, political, or surveyed boundaries.

State Animal Health Official (SAHO). The State official who is responsible for the livestock and poultry disease control and eradication programs in the official's State/Area, or that person's designated representative.

Secretary. The Secretary of the United States Department of Agriculture, or any officer or employee of the Department delegated to act in the Secretary's stead.

Serum. The liquid recovered from clotted blood.

Slaughter swine. Swine being sold or moved for slaughter purposes only.

Small holding. Production sites with ≥ 100 and $< 1,000$ breeder or feeder swine (also see US SHIP Production Sites Types).

State representative. A person regularly employed in animal health work by a State and authorized by the State to perform the functions involved or under a cooperative agreement with USDA.

State. Any of the States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Commonwealth of the Northern Mariana Islands, the Virgin Islands of the United States, or any territory or possession of the United States.

Surveillance. The systematic, ongoing collection and assessment of health data in a population with the intent of taking action when specific thresholds or conditions are met.

Swine production health plan. A written agreement developed for a swine production system designed to maintain the health of the swine and detect signs of communicable disease.

Swine production system accredited veterinarian. An accredited veterinarian who is named in a swine production health plan for a premises within a swine production system and who performs inspection of such premises and animals and other duties related to the movement of swine in a swine production system.

Swine production system. A swine production enterprise involving production on multiple premises, i.e., sow herds, nursery herds, and growing or finishing herds, but not including slaughter plants or livestock markets, that are connected by ownership or contractual relationships, between which swine move while remaining under the control of a single owner or a group of contractually connected owners.

Transitional production swine. Captive feral swine or swine that have reasonable opportunities to be exposed to feral swine.

US SHIP Classifications (5 groupings for delegate allocation)

Commercial breeding herd operations. Operations with a production site holding $\geq 1,000$ breeder females or ≥ 50 mature boars.

Commercial growing pig operations. Operations with a production site holding $\geq 1,000$ feeder swine.

Commercial slaughter facility operations. Operations with a facility that slaughters $\geq 100,000$ pigs per year.

Small commercial herd or slaughter facility operations. i.) farrow-to-finish or farrow-to-feeder production site with $< 1,000$ breeder females. ii.) production site with ≥ 100 and $< 1,000$ feeder or breeder swine. iii.) USDA or State Inspected slaughter facilities slaughtering $< 100,000$ pigs per year.

Non-commercial operations. Operations with a production site holding < 100 pigs.

US SHIP. United States Swine Health Improvement Plan. (usswinehealthimprovementplan.com)

US SHIP Production Site Types

Boar Stud. Production site with mature boars (inventory) that distribute semen to other production sites. (e.g., boar stud, with or without on-site isolation).

Breeding Herd. Production site with breeding females and house $\geq 1,000$ breeder or feeder swine. (e.g., breed-to-wean, breeding/gestation or farrowing only, with or without on-site gilt isolation/grow-out).

Growing Pig. Production site with $\geq 1,000$ feeder swine (nursery, grower, or finisher).

Farrow to Feeder or Farrow to Finish. Production site with breeding females, grow feeder swine for purposes other than breeding stock replacement for this particular farm site, and house $\geq 1,000$ breeder or feeder swine.

Small Holding. Production sites with ≥ 100 and $< 1,000$ breeder or feeder swine.

Non-Commercial. Production sites with < 100 pigs.

US SHIP Program Standards. Requirement to be met or exceeded by enrolled producer and packer sites to be certified in the US SHIP pilot as approved by majority vote at the US SHIP House of Delegates.

US SHIP Resolutions. Working group or project approved by majority vote at the US SHIP House of Delegates to further explore specific issues for consideration for potential future standards.

US SHIP Risk Level Classifications (All Outside of Control Areas)

Risk Level 1. US negative for ASFV and CSFV.

Risk Level 2. US positive, operations normalizing, and State or Region negative.

Risk Level 3. US positive, immediately after incursion, or State or Region positive.

US SHIP Technical Committee. A committee made up of technical experts on swine health, biosecurity, surveillance, and diagnostics and is composed of representatives from the swine industry, universities, and State and Federal governments.

US SHIP. US Swine Health Improvement Plan.

USDA. The United States Department of Agriculture.

Veterinarian-in-Charge. The veterinary official of Veterinary Services, APHIS, USDA, who is assigned by the Administrator to supervise and perform APHIS' official animal health work in the State/Area concerned.

Veterinary Services representative. A person employed by Veterinary Services, APHIS, USDA, who is authorized to perform official ASF eradication activities.

Veterinary Services. The Veterinary Services branch of APHIS, USDA.

Virulence. A quantitation of the pathogenicity of an agent. Can be numerically expressed as the ratio of the number of cases of overt infection in the total number infected. When death is the only criterion of severity, virulence is the case-fatality rate.

Virus elimination (VE). Cleaning and disinfection measures conducted to destroy or eliminate ASFV or CSFV from an affected premises.

Zone and area designations for ASFV and CSFV response

Buffer Zone. Zone immediately surrounding an ASFV or CSFV infected zone or a contact premises.

Control Area. Defined as ASFV or CSFV infected zone plus buffer zone.

Free Area. Area not included in any Federal or State Control Area.

Infected Zone. Zone immediately surrounding an ASFV- or CSFV-infected premises.

Surveillance Zone. Zone outside and along the border of a Control Area.