DSV Alvin Pre-Cruise Chief Scientist Checklist

Overview: This pre-cruise checklist is designed to ensure the Chief Scientist, the Alvin Operations Coordinator, and the Alvin Expedition Leader understand and acknowledge the science requirements and vehicle expectations before the cruise. We encourage all Chief Scientists to follow the checklist and to meet all deadlines to improve the Alvin team's ability to fulfill science objectives and increase the chance for a successful science cruise. Please note, some of the information below will also be required in MFP.

All communications for pre-cruise planning should be sent to alvin-precruise@whoi.edu. This email list will ensure the Alvin Operations Coordinator, Expedition Leader & Engineering Leads are part of the planning process.

NOTE: Please include the cruise ID, PI name, and a description of the inquiry, in the subject line.

6 - 12 Months Prior to Cruise

- ☐ **Send funded proposal to alvin-precruise@whoi.edu to enable the Alvin Team to review the science objectives, cruise location, and proposal details.**

- ☐ **Review website**
  - ☐ Alvin Vehicle Tour
  - ☐ Vehicle Specification
  - ☐ Systems, Sensors and Sampling
  - ☐ User-supplied Equipment
  - ☐ Alvin Capabilities
  - ☐ Data Deliverable Document
  - ☐ NDSF Data Policy

- ☐ **Review Camera configuration**
  - ☐ If planning > 4500m dives, 1 Alvin MISO-style GoPro camera is available (rated to 6500m)
    - ☐ PATZ (pan and tilt, zoom) cameras will be removed
    - ☐ 2 Alvin MISO-style GoPro cameras will be removed
  - ☐ Determine placement of digital still camera
    - ☐ Alvin_GoPro2 can be mounted on Basket or Elevator (possibly arm as - well)
  - ☐ Alvin does not provide photo mosaicing as part of the standard data product. If planning for photo mosaicing, alternate custom imaging arrangements must be discussed. Please contact alvin-precruise@whoi.edu.

- ☐ **Science-provided Equipment**
  - ☐ Determine if anyone in the science party has equipment (sensors, sampling gear, cameras, biological boxes, etc) to be installed **on or used in** the submersible (including any science user laptops).
  - ☐ Send details of the equipment, sizes, weight (in and out of water), and power requirements to alvin-precruise@whoi.edu. Alvin Operations Coordinator will evaluate all equipment for compatibility with sub systems, and determine if any science equipment needs toxicity/flammability testing, implodable/explodable testing.

    Please note: Pressure vessels constructed from certain experimental or unpredictable materials such as glass or ceramics cannot be certified for use with *Alvin.*
  - ☐ After any required pressure testing, send certifications to alvin-precruise@whoi.edu and bring paper copies with you to sea.

Revised May 2025

- ☐ **Develop Alvin Basket plan** (400 lb max max payload in air, 16 sq ft. (48”x48”))
  - ☐ Begin to compile a list of basket mounted equipment including pictures, fully loaded wet and dry weights, dimensions and launch configuration.

- ☐ **Develop Alvin Elevator plan** (if any)
  (400-1000 lbs max payload in air dependent on elevator configuration)
  - ☐ Determine if Alvin elevator operations are required
  - ☐ Begin to compile a list of elevator mounted equipment including pictures, fully loaded wet and dry weights, dimensions and launch configuration.

4 - 6 Months Prior to Cruise

- ☐ **Develop detailed cruise and dive plans prior to the Alvin pre-cruise planning meeting. (scheduled 4-6 months prior to the cruise). Send alvin-precruise@whoi.edu a *draft* document containing**:
  - ☐ Science Objectives
  - ☐ General dive targets to inform navy area clearances
    (# of dives, approx. coordinates/ area, expected depths)
  - ☐ Intentions for user-supplied equipment
  - ☐ Intentions for facility-supplied equipment
  - ☐ Basket requirements
  - ☐ Elevator needs, if any (details discussed during pre-cruise meeting)
  - ☐ Imaging requirements

- ☐ **Attend pre-cruise planning meeting(s).**

  Pre-cruise meeting agenda
  - ☐ Overall cruise plan (Chief Scientist)
  - ☐ Alvin Observer Pre-Dive Briefing which includes observer physical requirements & medical considerations to be completed with each individual in the science party that will be diving in the vehicle. (Alvin Operations Coordinator)
  - ☐ Daily routine (Dive day schedule, science meetings) (Alvin Operations Coordinator, Chief Scientist)
  - ☐ Bottom time expectations
  - ☐ Weather/contingency planning
  - ☐ Plans for Pilot-In-Training and any engineering dives (Alvin Operations Coordinator)

  - ☐ **Daily dive plan/launch and bottom targets**
    - ☐ General dive targets to inform daily/ cruise dive area requests at this time
    - ☐ Exact coordinates to be provided upon arrival to the vessel
      Alvin (decimal degrees: e.g. 42.15188°)
      Atlantis (decimal minutes: e.g. 42° 9.1128’)
    - ☐ Navy dive area clearance (Alvin Operations Coordinator)

  - ☐ **Guidance on Navigation Files for NDSF Dive Planning**
    Please Note: *Underlay files are not a requirement, but provide the pilot with valuable situational understanding of the sampling and work area. The science party is encouraged to provide underlays, where possible.*
    - ☐ NDSF Dive Planning document
      - ☐ Underlays - bathy files (.grd) or image files (.png, .tif, or .bmp)
        *Files should be <30MB

- ☐ Targets - CSV format (.txt or .csv)
  *Coordinates need to be in Decimal-Degrees and provided as Northings & Eastings
- ☐ GeoMapApp for NavG3 underlay creation document
  *Possible alternatives to GeoMapApp (ie. QGIS & Fledermaus but both require a license)

☐ **Discussion of user-supplied equipment (Chief Scientist)**
- ☐ Confirmation that all pressure, flammability, or toxicity testing needed has been completed or is planned (Alvin Operations Coordinator)
  Please note: Pressure vessels constructed from certain experimental or unpredictable materials such as glass or ceramics cannot be certified for use with *Alvin.*
- ☐ Discuss ground visibility power requirements and other interface considerations

☐ **Confirmation of all Alvin-supplied equipment to be installed on Alvin (Chief Scientist)**
- ☐ Search Sonar
- ☐ Magnetometer
- ☐ Heat Flow Probe
- ☐ Rock Collection Basket
- ☐ Push Sediment Corers
- ☐ Sm Capacity Slurp Sampler
- ☐ Lg Capacity Slurp Sampler
- ☐ Bio Collection Box: Standard (12x12x12”)
- ☐ Bio Collection Box: Large (12x24x12”)
- ☐ Bio Collection Box: Sensitive Sample (12x18x12”)
- ☐ Niskin Water Sampling Bottles (1.2 Liter)
- ☐ Major Water Samplers
- ☐ CTD
- ☐ Scoop Nets
- ☐ Temperature Probes

☐ **Basket weight and space (400 lb max payload in air, 16 sq ft. (48”x48”))**
- ☐ Provide a list of basket mounted equipment including pictures, fully loaded wet and dry weights, dimensions and launch configuration.
  - ☐ NOTE: If rock sampling is anticipated, recommended maximum pre-launch basket load-out weight should not exceed 300 lbs in air

☐ **Planned Elevator work (if any)**
- ☐ Provide a list of elevator mounted equipment including pictures, fully loaded wet and dry weights, dimensions and launch configuration.
- ☐ 400-1000 lbs max payload in air dependent on elevator configuration
  - ☐ NOTE: If rock sampling is anticipated, recommended maximum pre-launch basket load-out weight should not exceed 400 lbs in air

☐ **Imaging System Configuration**
☐ **Review standard Data Product and Sealog Customization (Data lead)**
☐ **Any planned media (Photojournalists, Documentary film crew, etc) participation**
- ☐ Chief Scientist to contact Jayne Doucette in the WHOI Communications Department

☐ **Generate action items for both parties with deadlines**

No later than 1 Month Prior to Cruise

Revised May 2025

- ☐ **Send draft dive plans including locations and coordinates to alvin-precruise@whoi.edu**
- ☐ **Review Storage Media Recommendations**
- ☐ **Review training videos**
  - ☐ Alvin In Hull Briefing
  - ☐ Sealog & AIS training videos
  - ☐ DSV Alvin Imaging System - Reference Guide
  - ☐ Alvin Imaging System: Observer User Interface Guide
  - ☐ GeoMapApp for NavG3 Underlay Creation
  - ☐ NDSF Dive Planning
- ☐ **Review additional resources & informational pages**
  - ☐ Operations
  - ☐ Alvin Observer Pre-Dive Briefing
  - ☐ Safety information
- ☐ **Close out remaining action items**

* This list is for planning with DSV Alvin and does not include the broader overall cruise plan.

Revised May 2025