

## Roles and Responsibilities and Work Flow Diagram for NCOP Operations (Self-Contained Current Meter Field Surveys)

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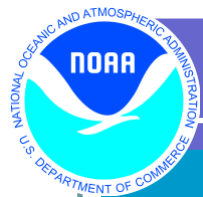
- 1. Title** Roles and Responsibilities and Flow Diagram for NCOP Operations (Self- Contained Current Meter Field Survey)
- 2. Purpose**

The purpose of this document is to identify the appropriate Divisions within CO-OPS who are responsible for performing work throughout the ROS lifecycle of the current survey project in support of the National Current Observation Program (NCOP).
- 3. Background/History**

The mission of the National Current Observation Program (NCOP) is to accurately measure, collect, analyze, and publish the tidal current data within estuaries and along the coastline within the Exclusive Economic Zone (EEZ) of the United States. The primary products generated by NCOP are predictions published in the Tidal Current Tables (TCT), quality-controlled data sets, and web-based harmonic tidal current predictions. While NCOP products support NOAA strategic goals and cross-cutting priorities, the main objective is to support the Nation’s commerce with information for safe, efficient, and environmentally sound transportation. Users of NCOP products include CO-OPS, NOS, the Army Corps of Engineers, the USCG, hydrodynamic modelers, marine transporters, and oil spill responders.
- 4. Scope/Applicability**

This SOP describes the steps necessary to perform a CO-OPS-led (i.e., in-house resources and not IDIQ contractor-supported), finite duration current meter survey project in support of NCOP. Within each step, the various roles and functional responsibilities required to perform a task are mapped to personnel within OD, FOD, ED, ISD and the PMT.
- 5. Main Processes**

Appendix A illustrates a “swim lane” diagram which provides an overview of the workflow for the current meter project and the roles and responsibilities of each Division throughout the ROS project lifecycle. Each task box represents a block of work and the color of the box indicates the step within the ROS project lifecycle. Divisional responsibility is indicated by the box’s placement within a “swim lane.”



## 6. Detailed Sub-Processes/Checklists

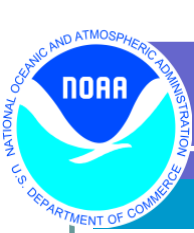
The numbers represent the sequential workflow, with a brief description of the corresponding roles and responsibilities of the group indicated in parenthesis. Note that once a Project Lead (PL) is appointed, the PL should be notified of progress throughout the project lifecycle. A detailed description of each box is also given in the *7.1.50.0 Guide for the Execution of Current Survey Projects*.

### **STEP 1**

- a) External Sponsor/Stakeholder/User Request (PMT)
  - Creates and maintains the 5-year NCOP Strategic Implementation Plan.
  - Proposes requirements for the current FY and future years for approval by the Executive Leadership Team (ELT).
  - Receives external user requests from other CO-OPS Divisions.
  - Delivers external requirements into planning process and recommends projects that should be approved for detailed planning based on CO-OPS priorities.
- b) Internal Sponsor/Stakeholder/User Request (OD)
  - Delivers internal requirements (i.e., need to update historical predictions, user requests) into planning process.
  - Reviews requirements for current FY described in Strategic Implementation Plan to ensure that proposed projects are within the scope of valid CO-OPS oceanographic requirements and resources.
- c) Request Resource (PMT)
  - Throughout the year and especially during the annual CO-OPS planning process, submits a CO-OPS Requirement Request (CRR) for approval.
  - Once approved for planning by the ELT, the Division Chiefs and Resource Managers recommend a Project Lead, Field Lead and ED Technical Lead for the project.

### **STEP 2**

- a) Project Plan Development (OD)
  - Drafts budget plan and submits to OD Chief and CO-OPS Chief Financial Officer for review and approval (Project Lead).
  - Develops the project scoping documents and project schedule with generic resources based on user requirements (Project Lead).
  - Requests that project schedule and timeline are reviewed and project tasks are resourced by appropriate Resource Managers to identify team members. When the timeline is approved and the tasks are fully resourced by the Resource Managers, the recommendation to baseline the plan can be made. (Project Lead).



- Develops Outreach Plan with PMT and Communications Specialist (Project Lead).
- Assembles a System Design Team (representative from OD, ED and FOD).

### **STEP 3**

#### a) Oceanographic Requirements (OD)

- Conducts desktop reconnaissance of the proposed study area and identifies candidate station locations.
- Publishes project plan and station list. Throughout the project lifecycle, the Project Lead maintains the project plan and communicates with Senior Management on project progress through Quarterly Briefings. All project documentation is stored on the CECAT Google Sites Project Page and in the appropriate CO-OPS Common/Maritime/Current Survey folder.
- Submits project budget to PMAB Branch Chief, OD Division Chief and CO-OPS Budget Officer for approval.
- Provides input to Statement of Work to charter vessel (if unable to use in-house vessel) to perform reconnaissance operations, which is prepared and submitted by Field Lead (FOD) to the appropriate NOAA acquisition office.
- Acquires applicable environmental permits to perform operations.
- Conducts stakeholder meetings with the field team to validate user requirements and discuss the project plan.
- Participates in field reconnaissance, which is led by Field Lead (FOD).
- Prepares recon documentation for ED mooring configuration review.

#### b) System Design Requirements (ED)

- Participates in field reconnaissance, which is led by Field Lead (FOD).
- Provides system design requirements for the current meter systems based on reconnaissance information (DDET).
- For new system design requirements, the Systems Support and Evaluation Branch's (SSEB) Ocean System Test and Evaluation Program (OSTEP) will provide input and technical guidance.

#### c) Deployment and Recovery Requirements (FOD)

- Leads field reconnaissance.
- Provides vessel support if able to use an in-house vessel.
- Provides input from field perspective for oceanographic and system design requirements based on deployment and recovery requirements for the suggested depth, the vessels available in the area, and the mooring and equipment inventory.

d) System Design (ED)

- Reviews the oceanographic, system design and deployment and recovery requirements to design the appropriate system (Engineering Review Board).
- For new system design configurations, Engineering and Development Branch's (EDB) Design and Development Engineering Team (DDET) and SSEB/OSTEP will collaborate. FOD personnel should be consulted to provide operational field considerations.
- For existing systems, EDB/DDET will provide the system designs and risk assessment.
- Provides system design recommendations to the project team.
- Provides engineering drawings, technical specifications, cost estimates and other supporting documentation for system procurement.

## **STEP 4**

a) Testing and Acceptance (if applicable) (ED)

- SSEB/OSTEP will test and evaluate new systems, and communicate findings to the other divisions.
- Testing and acceptance shall include a plan for database ingestion.

b) Integration (If applicable) (ED/FOD/OD/ISD)

- EDB/DDET and COET develop system integration plans. Coordination with CECAT is required.
- Integration will include work from the Instrument Labs (CIL/SIL), OSTEP, COET, and ISD. Full testing should include integration within the existing data ingestion system. New current meters should not be deployed as part of any Current Survey unless full integration to the data ingestion system is successful.

c) Procurement of Equipment (Mounts, Vessels, Cables, Lines and Other Mechanical Equipment/Supplies) (FOD)

- Procures the project-associated hardware and other non-instrument-related supplies (i.e., cables, lines, etc.) after receiving approval from the Engineering Review Board.
- For new systems, procurement may involve a few months' time lag as systems are procured and assembled.
- For existing systems, FOD will keep the available systems in deployable status by performing the necessary maintenance and upkeep of TRBMs, ES2s, SUBS, anchors, floats, and other non-electronic hardware.
- As necessary, prepares and submits the Statement of Work (with guidance from the Project Lead and ED) and C-Request to procure the appropriate vessel(s), based on equipment to be deployed and/or work to be conducted.



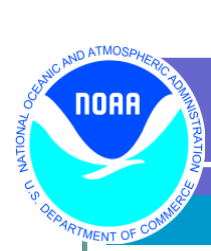
- d) Procurement of Equipment (Sensors, Releases, Beacons, batteries and Other Associated Instrumentation/Supplies) (Instrument Lab/POB NCOP Lead)
- Procures system instrumentation, sensors, releases, and other electronics after receiving approval from the Engineering Review Board
  - For new systems, this may involve a few months' time lag as systems are procured and assembled.
  - For existing systems, CIL/SIL will perform inspections and maintenance of sensors, releases, and other electronics, and will coordinate repair and calibration of sensors as necessary.
  - Procures all needed equipment (mounts and sensors)
- e) Assembly and Throughput Testing (Instrument Lab/POB NCOP Field Lead)
- Maintains sensor and electronic equipment inventories and ensures that sensors, systems, and electronic equipment are available and properly functioning.
  - Coordinates with FOD and various vendors for the repair of sensors, instruments, and other electronics.
  - Provides training to field personnel for newly emerging technologies, sensors, systems, and other electronic equipment and ensures documentation prepared by OSTEP meets the needs of field personnel.
  - For new sensors, works with CECAT lead, COET, and ISD to ensure data can be ingested following the ingestion plan.

## **STEP 5**

- a) System/Sensor Preparation for Deployment (Instrument Lab/ POB NCOP Field Lead)
- Assesses initial system performance and confirms system instrumentation, sensors, releases, and other electronics are ready for issue to Field Lead
  - Originating with an equipment request, coordinates with field personnel to ensure that sensors and electronic equipment are prepared in a timely manner in order to meet project schedules and deadlines.
  - Delivers functional electronic equipment to Field Lead.
  - Submits appropriate transfer of property forms.
- b) Field Preparation (FOD)
- Locates and secures a staging area in close proximity to the project site.
  - Ensures all mechanical equipment are fully operational prior to shipment.
  - Ensures the vessel/contract support is prepared for mobilization.
  - Ensures all mechanical and electronic equipment are ready for shipment to the project staging area.
  - Receives copies of all applicable permits from Project Lead.
- c) System Deployment (FOD)
- Ships the equipment from the FOD facility to the project staging area.
  - Sensor calibration performed by FOD.
  - Receives instrument configuration files that are prepared by Project Lead (OD).



- Ensures all mechanical equipment are fully operational prior to deployment.
  - Leads all installation or deployment activities, including but not limited to logistics to and from and while on site, installation/deployment team assignments, completion of instrument and mount pre-deployment checklists, safety briefings, final instrument preparations, Float Plan delivery, vessel SOPs, Notice to Mariners documentation, and contract oversight if applicable. Other team members that are not in FOD may be delegated various tasks as appropriate.
  - Oversees communication with other CO-OPS personnel and teams throughout the installation/deployment phase to keep them informed of the project status so they are prepared to respond as needed.
  - Reviews deployment metadata collected by the installation/deployment team for completeness and accuracy.
- d) System Recovery (FOD)
- Leads all removal/recovery activities, including but not limited to logistics to and from and while on site, removal/recovery team assignments, safety briefings, final instrument preparation, light field cleaning on all components, Float Plan delivery, vessel SOPs, Notice to Mariners, documentation, and contract oversight if applicable. Others on the team that are not in FOD may be delegated various tasks as appropriate.
  - Cleans the equipment - ensures marine growth is removed prior to shipping / returning to the Instrument lab or the POB NCOP Field Lead.
  - Prepares the equipment for shipment from the removal/recovery location to the appropriate field office.
  - Submits Equipment Return forms to Instrument Lab or POB NCOP Field Lead describing condition of all equipment used in field operations (5 working days after return from field).
  - Oversees communication with other CO-OPS personnel and teams throughout the removal/recovery phase to keep them informed of the project status so they are prepared to respond as needed.
- e) Data Recovery (FOD/CECAT)
- FOD recovers ADCP and CTD instruments.
  - CECAT uploads data and documents corresponding metadata.
  - CECAT reviews data recovered and metadata collected by the removal/recovery team for completeness and accuracy.
  - CECAT submits the complete data and metadata package as prescribed in the project schedule (station logs, completed checklists, if used, and raw data, and other documentation) to Project Lead.
  - All project documentation is stored on the CECAT Google Sites Project Page and in the appropriate CO-OPS Common/Maritime/Current Survey folder. Documentation shall be completed and added to these drives within 30 calendar days of the final recovery of the turn-around or recovery trip or as described in the scope of the project. CECAT shall notify COET upon



completion of documentation.

- Documentation is to consist of the following deliverables, except as where noted in the Vision and Scope document:
    - Station list showing locations, instrument and platform types, and ingestability status.
    - Station Logs.
    - Completed checklists if used.
    - Raw data files.
    - Data from the ADCP (labeled and sorted per station) in an ingestible data format as per the approved Testing and Acceptance Plan (see Step 4(a)).
    - Instrument setup and configuration files and (compass) calibration files where appropriate.
    - Deployment/Recovery Photos.
    - Sensor/Mooring Diagrams.
    - Best Management Practices (BMP).
  - All NCOP project documentation shall remain on the common drive (or other appropriate location) in addition to successful ingestion by COET
- f) System/Sensor Check-in (Instrument Lab or POB NCOP Field Lead)
- Receives Equipment Return forms, sensors and electronic equipment returned from the field operations and prepares the sensors and equipment for future deployment. This will include:
    - Updating appropriate inventory systems.
    - Completing system inspections.
    - Performing system functionality tests.
    - Cleaning and repairing equipment.
    - Performing system maintenance; and
    - Coordinating calibrations and repair of sensors and updating systems.
    - Request Return Merchandise Authorization (RMA's) from vendors and submit units for repair as necessary.

## **STEP 7**

- a) Documentation Review (ED/OD)
- Performs documentation and data review for completeness.
  - EDB/COET performs metadata entry and data loading.

### **Deliverables and Timelines**

In order to ingest the data collected from the current surveys, data files have to be submitted to COET to load into the database via C-MIST. For C-MIST to properly parse the current survey data, the database has to be configured with the deployment and recovery metadata as Step 7 outlines. Below are the required submissions for current survey deployments to facilitate metadata configuration and data loading.

1. Station Logs
2. Data From the ADCP
3. Instrument Files (Configuration files)
4. Deployment/Recovery Photos
5. Sensor/Mooring Diagrams

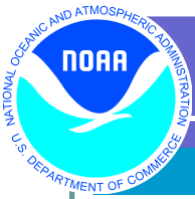
The Project Lead will scope out the timeline and duration of the project in the Vision and Scope document, which is reviewed and approved by the ELT. In this document, the Project Lead will document if the timeline for submission of metadata and current survey data to COET is not sufficient due to the number of current meters deployments. However, for faster turnarounds of documentation submission and metadata entry, the Project Lead will document that all required documentation shall be submitted within 30 calendar days after the final recovery for the turnaround or recovery visit. For situations where this timeline cannot be met, the timeline identified within the Vision and Scope document takes precedence.

b) Data Loading in Database (ED)

- Configures NCOP project metadata into the National PORTS Database (NPDB) (i.e., project name, project type, project region, project lead) (EDB/COET).
- Acknowledges receipt of documentation package from OD (EDB/COET).
- Evaluate and enters the metadata for each survey station into the NPDB (EDB/COET).
- Verifies metadata information previously entered into the NPDB (EDB/COET).
- Ingests survey station data via C-MIST after metadata has been verified.
- Communicates with DPT and CECAT to confirm that data has been ingested and the station is ready for processing (EDB/COET)

c) Data Processing (OD)

- Creates processing logs (which are in station logs) and checklists to be used by Data Processing Team (DPT) to validate that station processing steps have been completed (CECAT).
- Develops a data processing tracker (located on Google Drive) to monitor status of station processing, which is maintained by the Processing Lead (CECAT). The analysis results are stored in the appropriate OD Common/CECAT/Current Surveys folder.
- Performs QA/QC on preliminary data using C-MIST (DPT).
- Alerts Instrument Lab if sensor issues are noticed during QA data checks.
- Processes quality controlled data to generate harmonic constituents (DPT).



d) Data Verification and Dissemination (OD)

- Verifies that data analysis for each station has been completed (CECAT).
- Disseminates data for product development and web display (CECAT).
- Develops a spreadsheet that details the recommended updates to the online Tidal Current Predictions. This spreadsheet is stored in the appropriate OD Common/CECAT/Current Surveys folder. (CECAT).
- Delivers recommended updates to the User Services Team (UST) via email (CECAT).
- Develops spreadsheet for Instrument Labs that contains issues with instrumentation found during data analysis.

e) Data Product Generation (OD)

- Produces tidal current predictions from calculated harmonic constituents for website display (UST)
- Develops technical reports or special publications of the study area (CECAT).

## **STEP 8**

a) Product Delivery and Outreach (PMT)

- Chairs stakeholder meetings to publicize tidal current products. Communications Specialists and/or Project Lead may also be invited to attend or provide background information prior to meeting.
- Circulates products and outreach materials in accordance with the approved Communications Plan.
- Solicits feedback from the user community about the products or future project requests.

b) Lessons Learned/Project Closeout (OD)

- Creates Lessons Learned documentation which can be used for future projects. This document is stored on the CECAT Google Sites Project Page and in the appropriate ROS CO-OPS Projects Document folder. The Lessons Learned document incorporates input from all divisions with an emphasis on the following:
  - Revisions to SOPs or testing procedures, new technologies, sensors, releases and other associated instrumentation (OD, Instrument Labs, FOD, ED).
  - Personnel, vessels, mounts, cables, lines and other mechanical equipment (FOD).
  - Project management, coordination and product development and delivery (OD).
  - Develops project recommendations that target product and process improvements and efficiencies.
- Chairs project closeout meeting with project team to celebrate successes and address deficiencies that occurred during the project based on lessons learned from all divisions.



7. **Quality Assurance/Control**

The appropriate CO-OPS Branch Chiefs should be consulted when divisional roles and responsibilities need to be clarified or issues need to be resolved.

8. **Management/Responsibility**

The Maritime Services Program Manager oversees the National Current Observation Program. Depending on the task, the corresponding Branch Chief oversees the work of responsible division personnel to complete the required work. Any changes to this SOP must be approved by the CO-OPS Branch Chiefs in consultation with the CECAT Team Lead.

# APPENDIX A

