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Executive Summary

CO-OPS Mission Statement

CO-OPS is the authoritative source for accurate, reliable, and timely tides, water levels, currents and other oceanographic information.

Our data, products and services support safe and efficient navigation, sound ecosystem stewardship, coastal hazards preparedness and response, and the understanding of climate change.

CO-OPS Vision Statement

Everyone has ready access to tide, water level, current and other coastal oceanographic information needed for informed decision-making.

The National Physical Oceanographic Real Time System (PORTS®) and NWLON (National Water Level Observation Network) Major Application ingests, quality controls, processes, analyzes, and disseminates water level, current, and meteorological observations and products based on measurements received from the oceanographic sensors installed at PORTS and NWLON locations. The application provides operationally sound observations and monitoring capabilities coupled with operational Nowcast/Forecast modeling.

This operational analysis (OA) is an annual, in-depth review of the application’s performance based on the following:

- Customer Results
- Strategic and Business Results
- Financial Performance
- Innovation

This report focuses on the operational state of the application as of September 30, 2010, and is based on guidance developed by the Department of Commerce.

The PORTS and NWLON Major Application directly facilitates NOAA’s Strategic Goals to:

- Support the Nation’s commerce with information for safe, efficient, and environmentally sound transportation;
- Serve society’s need for weather and water information;
- Protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management; and
- Understand climate variability and change to enhance society’s ability to plan and respond.

The current Major Application meets established cost, schedule, and performance parameters.
1.0 Customer Results

The PORTS and NWLON Major Application is meeting the customer’s needs and is delivering the services that it intends to deliver. Throughout FY2010, the application continued to aid users by providing water level and elevation information for successful coastal wetlands rehabilitation; continuing to provide real time data to support safe navigation at twenty-one PORTS; implementation of an enhanced Currents Data Retrieval Application, the addition of current meters to the automated quality control system; the upgrading of an offsite emergency server; improvements to the data ingestion system; the addition of a new microwave water level sensor type; a software upgrade to the voice system and improved data and product access through web server hardware and software upgrades.

The value and success of this major application in terms of meeting customers’ needs mandates a continued need for this investment. Figure 1 describes the logic model employed by the application to determine its outputs and outcomes. The application provides these documented outputs and customer focused outcomes.

![Figure 1 PORTS and NWLON Major Application Logic Model](image-url)
1.1 Customer Requirements and Costs

The PORTS and NWLON application’s principal customers and stakeholders are the commercial shipping industry, the US military, and government agencies responsible for search & rescue (SAR), hazardous material spill response and planning, and environmental management and the general public in coastal communities. PORTS and NWLON information, when combined with up-to-date electronic or digital nautical charts and precise global positioning data, provides the mariner with a clearer picture of the potential dangers that can threaten navigation safety. Shipping companies seeking to improve economic productivity use navigation systems aboard ships to maximize cargo load. Real-time knowledge of the currents, water levels, winds, waves, visibility, and density of the water gained through these navigation systems can decrease the turnaround time and increase the amount of cargo moved through a port and harbor by safely utilizing all available dredged channel depth. The economic benefit is significant. For example, one foot of draft accounts for between $36,000 and $288,000 of increased revenue per transit for vessels in Tampa Bay (Estimating Economic Benefits from NOAA PORTS Information - A Case Study of Tampa Bay July 2005). Another report for Houston/Galveston Bay PORTS suggests that a best estimate of the presently realized quantifiable economic benefit from Houston/Galveston PORTS® data is $14.1 to $15.6 million (Estimating Economic Benefits from NOAA PORTS Information - A Case Study of Houston/Galveston March 2007). A recent report for Columbia River PORTS states that the best estimate of the presently realized quantifiable benefit from Columbia River PORTS® data is about $7.4 million/year (Estimated Economic Benefits from NOAA PORTS® Information: A Case Study of the Columbia River June 2010).

PORTS and NWLON information also benefits community preparedness and response during severe weather events. Timely information about coastal flooding and surf conditions can help coastal communities develop better evacuation and hazard response plans, protect lives and property, and minimize impacts to sensitive habitats. Physical characteristic data such as currents, water levels, salinity, and meteorological variables in and around waterways has been used to document freshwater inflows into sensitive saltwater habitats and minimize environmental impacts from pesticide spraying, one of many sources of non-point source pollution.

PORTS installations are customer/stakeholder driven and cost shared. Before establishing a PORTS site, requirements from customers and stakeholders are gathered, documented and agreed upon to make sure their local needs will be met. This process may involve talking with site managers, harbor masters, regional resource managers, usually those interested stakeholders that will be investing in the system. The PORTS and NWLON application works with other partners, such as the NWS Tsunami Warning Centers, the NWS Weather Forecast Offices, the OAR Office of Global Programs, and coastal estuarine managers, by providing them with timely, quality controlled real-time water level information for their programs. Working with partners helps to ensure that the best value is achieved for everyone involved.

Tidal current observations are conducted at various key locations around the nation to update tidal current predictions primarily used by mariners for safe navigation. Locations are prioritized by user feedback on locations where tidal current predictions are no longer accurate due to local bathymetric changes, the age of the original observation data and other factors. User feedback is gathered through a variety of methods ranging from outreach efforts on a local level to web based reports.
Methods used to track performance are conducting economic benefits analyses, and gathering user feedback with the customers and stakeholders at meetings, conferences, and on-site. In addition, user information can be gained from a NOAA web statistics web page for the PORTS and NWLON application (Overview of Tides and Currents web pages). These pages present the daily, weekly, monthly, quarterly and yearly number of visits, hits, types of users, popular pages as well as other relevant information which can be used to tailor the web site’s pages. For example, Figure 2a shows the number of visits for FY2010 to the tidesandcurrents.noaa.gov domain. Figure 2b shows how visits have increased month to month for FY2010. Figure 2c shows how visits increased from FY2009 to FY2010.

<table>
<thead>
<tr>
<th>Date</th>
<th>Pages</th>
<th>Hits</th>
<th>Errors</th>
<th>GigaBytes</th>
<th>Visits</th>
<th>Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>October 2009</td>
<td>8,545,473</td>
<td>36,229,493</td>
<td>410,393</td>
<td>513.30</td>
<td>1,232,654</td>
<td></td>
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<tr>
<td>November 2009</td>
<td>7,312,803</td>
<td>29,155,913</td>
<td>360,283</td>
<td>404.20</td>
<td>1,070,849</td>
<td></td>
</tr>
<tr>
<td>December 2009</td>
<td>9,293,416</td>
<td>33,930,121</td>
<td>287,997</td>
<td>536.40</td>
<td>1,059,080</td>
<td></td>
</tr>
<tr>
<td>January 2010</td>
<td>10,246,107</td>
<td>37,946,169</td>
<td>339,650</td>
<td>681.69</td>
<td>1,219,680</td>
<td></td>
</tr>
<tr>
<td>February 2010</td>
<td>9,936,116</td>
<td>35,003,876</td>
<td>1,864,059</td>
<td>628.30</td>
<td>1,119,616</td>
<td></td>
</tr>
<tr>
<td>March 2010</td>
<td>11,219,407</td>
<td>36,378,113</td>
<td>411.817</td>
<td>678.90</td>
<td>1,408,225</td>
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<tr>
<td>April 2010</td>
<td>11,330,235</td>
<td>39,195,117</td>
<td>375.167</td>
<td>700.50</td>
<td>1,200,043</td>
<td></td>
</tr>
<tr>
<td>May 2010</td>
<td>12,173,650</td>
<td>44,101,288</td>
<td>447.911</td>
<td>758.90</td>
<td>1,285,008</td>
<td></td>
</tr>
<tr>
<td>June 2010</td>
<td>11,426,083</td>
<td>41,449,055</td>
<td>875.859</td>
<td>693.90</td>
<td>1,490,915</td>
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<tr>
<td>July 2010</td>
<td>12,231,145</td>
<td>43,596,657</td>
<td>1,367,429</td>
<td>774.83</td>
<td>1,681,965</td>
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</tr>
<tr>
<td>August 2010</td>
<td>11,987,458</td>
<td>46,821,062</td>
<td>2,063,574</td>
<td>742.7G</td>
<td>2,032,599</td>
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<td>September 2010</td>
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<td>43,616,440</td>
<td>1,474,181</td>
<td>699.9G</td>
<td>2,877,772</td>
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</table>

Figure 2a Number of visits for FY2010

Figure 2b How visits have increased month to month for FY2010
1.2 Performance Measures

The PORTS and NWLON Major Application supports the customer’s requirements. These measures align with the Customer Results Measurement Area within the Performance Reference Model developed by the Federal Enterprise Architecture Program Management Office (FEA-PMO). Table 1 summarizes these measures.

<table>
<thead>
<tr>
<th>Measurement Area</th>
<th>Indicator</th>
<th>FY2010 Baseline</th>
<th>FY2010 Target</th>
<th>FY2010 Actual Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customer Results</td>
<td># of operational nowcast/forecast models</td>
<td>9</td>
<td>11</td>
<td>11</td>
<td>To enhance the maritime navigation capabilities, conservation management of coastal and marine resources,</td>
</tr>
<tr>
<td>Customer Results</td>
<td>% of water level tidal prediction tables available on-line</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
<td>To increase the accuracy and data availability of water level tidal predictions</td>
</tr>
<tr>
<td>Customer Results</td>
<td>% of water level and meteorological data quality controlled through an automated process using artificial intelligence (CORMS AI)</td>
<td>50%</td>
<td>100%</td>
<td>100%</td>
<td>To enhance customers usability and reliability of PORTS and NWLON data</td>
</tr>
</tbody>
</table>

2.0 Strategic and Business Results

The PORTS and NWLON Major Application is meeting its own goals and objectives as well as those of the agency. Program management and controls are in place to ensure the Major Application.

Figure 2c How visits have increased from FY2009 to FY2010
continues to meet its goals and objectives and monitor how well the PORTS and NWLON Major Application performs.

2.1 PORTS and NWLON Helps to Achieve Strategic Goals

The PORTS and NWLON Major Application directly facilitates NOAA’s Strategic Goal to support the Nation’s commerce with information for safe, efficient, and environmentally sound transportation. Specifically, by providing near real-time oceanographic information, products and services to mariners, navigational safety and efficiency are improved. In particular, NOAA’s “air gap” technology received the ultimate test on the morning of June 27, 2009 as the new U.S. Navy LPD ship, the USS New York, sailed down the Mississippi River, clearing the underside of the Huey P. Long Bridge just north of downtown New Orleans by 64 centimeters (2.1 feet) – See Figure 3.

![Figure 3 By a margin of 64 centimeters, the USS New York clears the Huey P. Long Bridge.](image)

The PORTS and NWLON Major Application helps achieve NOAA’s goal to serve society’s need for weather and water information by providing real time data to support emergency responders and to improve NWS forecasts for storm surge, tsunami and other hazardous events. Specifically, at 1748 UTC on September 29, 2009, a magnitude 8.3 earthquake occurred southwest of American Samoa, and a destructive basin-wide tsunami was generated. This event was confirmed at both coastal tide gauges and DART buoys throughout the Pacific Basin. Due to the location of the earthquake, and the proximity to American Samoa, the NOAA tide gauge at Pago Pago was critical in confirming tsunami generation and developing initial arrival times for the Pacific and West Coast. The official Tsunami Warning Centers measurement at Pago Pago was 1.57 m at 1825 UTC. The CO-OPS Tsunami Web Site, developed in collaboration with the NOAA Tsunami Warning Centers and the Pacific Marine Environmental Laboratory, provided a comprehensive source for the NOAA tide gauge data.

The PORTS and NWLON Major Application helps achieve NOAA’s goal to protect, restore, and manage the use of coastal and ocean resources through an ecosystem approach to management by providing accurate tidal datums, frequency of inundation analyses, and other tools which are used to improve how habitat restoration is planned, implanted and maintained. For example, during June and July 2009, CO-OPS stations recorded higher than normal sea levels (SL) along the U.S. East
Coast. Near-peak levels in the latter half of June coincided with a *perigean-spring* tide, an extreme predicted tide when the moon is closest to the Earth during a *spring* tide. This tidal event added to the observed SL anomaly, produced minor coastal flooding, and caught the attention of many coastal communities because of the lack of coastal storms that normally cause such anomalies. For more detailed information, see NOAA Technical Report NOS CO-OPS 051, *ELEVATED EAST COAST SEA LEVEL ANOMALY: June – July 2009*, August 2009 (http://tidesandcurrents.noaa.gov/publications/EastCoastSeaLevelAnomaly_2009.pdf).

The PORTS and NWLON Major Application helps achieve NOAA’s goal of understanding climate variability and change to enhance society’s ability to plan and respond. Specifically, updating and adding new long term sea level trends support coastal zone management and long term planning for development along the coast. It also aids in understanding the state of the climate system.

CO-OPS released an initial version of a software product, referred to as NOAA Tides, at the beginning of FY2010. This web based application is able to generate on-line Tide Tables. It is anticipated that this product will eventually replace the need for the publications. The software product is platform independent, meaning it will work well on a variety of operating systems; the prediction results are displayed based on user selectable units and output options; and a GIS interface option is provided for the selection of stations for which predictions are being requested. An electronic predictions product will increase the accuracy of tide and tidal current predictions because the predictions can be generated from accepted harmonic constituents rather than the less accurate method of generating predictions based on an average adjustment value.

2.2 Business Results

2.2.1 Program Management and Controls

The NWLON is statutorily authorized to collect, analyze, and disseminate data on tides pursuant to the 33rd United States Code, Sections 883a-883f established under the auspices of the Act of August 6, 1947 (61, Stat, 787). Each PORTS implementation is a partnership effort in consultation with the local harbor or waterway organizations and with the local community providing installation and operation costs and is guided by an agreement between the Federal Government and the local partner. PORTS is explicitly authorized through the Hydrographic Services Improvement Act of 1998. Through this United States Code and these agreements new requirements or enhancements to the PORTS and NWLON Major Application are driven.

A detailed baseline of anticipated activities and expenditures is provided on an annual basis which includes maintenance of operational systems as well as new development, expansion, and modernization. The baseline takes into consideration the planning contained within the various IT Plans and within the context of the IT Architecture Plan. Prior to submitting the detailed baseline for the coming year, it is checked for any course corrections that are needed using actual activities and costs from the previous year as a guide and benchmark. This plan is submitted for approval by the Director of the Center for Operational Oceanographic Products and Services (CO-OPS).

The PORTS and NWLON Major Application is managed by teams which meet on a weekly basis to discuss operational issues, including performance, cost, and scheduling concerns. A report of any relevant issues is made to senior management every week. Once a quarter, the baseline plan is
reviewed. An analysis of any budget and performance level variances is conducted by the Information Systems Division, program manager(s) and budget control staff of CO-OPS. Significant variances that would keep a project from returning to the plan if not addressed and mitigated trigger management action. Although all causes of variances revealed in the analysis are addressed, technical issues, more often than not, cause unfavorable cost or schedule conditions. If technical deficiencies are found, alternatives for corrective action are considered including but not limited to redesign, scrap and remake, rework, etc. When considering these alternatives, the impact on cost and schedule is weighed in addition to the technical considerations. After an alternative is selected, it may become necessary for the PORTS and NWLON baseline plan to be adjusted. In some cases, a decision may be made to provide additional resources to the plan. Ultimately, the cost/benefit and price/performance factors are weighed in the decision making process to select the best response to any variance. What is most important is that the PORTS and NWLON application is monitored regularly, any and all variances are analyzed, and CO-OPS remains vigilant in refusing to address variances by simply increasing the budget, assigning more staff or extending the schedule.

2.2.2 Monitoring Cost, Schedule and Performance

Cost – Every quarter the Deputy Director meets with each Division Chief to review the quarterly budget. Monthly reports are submitted by contractors to their respective contracting Officer’s Representatives (CORs) to ensure contracts are within cost and on schedule. Tools used for budget tracking (i.e. planning and execution) are CAMS (Commerce Administrative Management System), Management Analysis and Reporting System (MARS), and AAP (Advanced Acquisition Plan).

Schedule – Microsoft Project is used to track various technical components, critical tasks and milestones of the PORTS and NWLON application. This software tool integrates the scope of work to be conducted with schedule and personnel resource elements for optimum project planning and control. Microsoft Excel is used to track cost components of the PORTS and NWLON application. This software tool tracks monthly spending, both planned and actual, for any IT-related costs. Accounting codes dedicated to IT are used.

Performance – The PORTS and NWLON application contribute to a number of corporate milestones and performance measures associated with a number of NOAA programs. Quad charts are generated on a quarterly basis to provide execution details regarding the performance parameters, schedule, budget, and any key risks that arise. This information is reported by the Program Manager of the Marine Transportation System Program, a component of NOAA's Commerce and Transportation Strategic Goal. The Program Manager reviews this information to ensure consistency with agency established budgets, program goals and policies, and mission objectives and requirements.

2.3 Reviews

A comprehensive review and assessment of the current information architecture for the PORTS and NWLON Application was performed by a consulting contract with Northrop Grumman in FY2003. The assessment noted two distinct data flows, a PORTS data flow and a NWLON data flow. It found that these two data flows sufficiently supported the original goals of PORTS and NWLON when each was an individual program, but that the capacity to leverage the information available through both data flows as they exist now in an attempt to meet the increasing information needs of the business requirements of today since the merger of the two programs is severely limited. It was therefore recommended that the capacity of the current information architecture be restructured to
better accommodate the business user requirements that span both data flows. Based on the assessment, a decision was made to proceed with the recommended changes to the architecture. As the requirement analysis and the development of proposed solutions progressed, it became apparent that the level of effort required to complete the re-engineering of the information architecture exceeded available resources. As a result, an information architecture team was established and focused on the procurement of contract services to perform the re-engineering efforts. A 5-year contract award was made to Project Performance Corporation (PPC) in August, 2006. Since the award of the contract PPC has been successful in reviewing the requirements for a consolidated metadata database, investigating database server performance and helped with the initiation of migrating to new database hardware. During this past fiscal year, they have reviewed the consolidated metadata database by comparing the existing metadata information from the operational database to the new consolidated database by running similar data retrieval commands and data queries. As they have found discrepancies in the comparison, they have worked with CO-OPS Subject Matter Experts (SME) to identify and resolved the issues. In addition, they have worked with the SMEs to improving the metadata in the operational database.

2.4 Security

The PORTS and NWLON system is accredited under requirements spelled out in NOA 212-13 (03/17/03) and the DOC IT Security Program and Minimum Implementation Standards (2005) that are based on OMB and NIST 800-53A security controls as mandated by the Office of Management and Budget (OMB). System Security Plans, Risk Assessments, and Contingency Plans were reviewed and approved; all NIST 800-53A security controls were tested; and the PORTS and NWLON Major Application received the “Authority to Operate” (ATO). CO-OPS used an independent party, Computer Network Assurance Corporation (CNAC), to do the testing. Based on the test results, appropriate Plans of Actions and Milestones (POA&Ms) were created and will be completed by the end of FY2011.

All CO-OPS systems contributing to the PORTS and NWLON Major Application are scheduled to be re-certified and re-accredited by FY2012. For FY2010 and FY2011, the years in between the more formal certification and accreditation process, all systems will undergo continuous monitoring by CO-OPS as well as by an independent party to make certain these systems continue to be compliant with security policies and maintain a strong security posture.

The systems are continuously monitored for security incidents by the NOAA Computer Incident Response Team (N-CIRT) and undergo quarterly vulnerability assessments.

2.5 Performance Measures

The PORTS and NWLON Major Application supports the strategic and business requirements. These measures align with the Mission and Business Results, Processes and Activities, and Technology Measurement Areas within the Performance Reference Model developed by the Federal Enterprise Architecture Program Management Office (FEA-PMO). Table 2 summarizes these measures.
Table 2: Business Results Performance Measures

<table>
<thead>
<tr>
<th>Measurement Area</th>
<th>Indicator</th>
<th>FY2010 Baseline</th>
<th>FY2010 Target</th>
<th>FY2010 Actual Result</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission and Business Results</td>
<td># of NWLON Stations</td>
<td>205 NWLON Stations</td>
<td>210 NWLON Stations</td>
<td>210 NWLON Stations</td>
<td>To expand area of coverage for which water level information can be provided</td>
</tr>
<tr>
<td>Mission and Business Results</td>
<td># of PORTS</td>
<td>19 PORTS</td>
<td>22 PORTS</td>
<td>21 PORTS</td>
<td>To expand area of coverage for which oceanographic information can be provided for maritime commerce</td>
</tr>
</tbody>
</table>

2.6 Other

The PORTS application has a requirement that 80% of the real-time data be acquired, be of good quality, and be displayed in real-time. During FY2010, 88% of real-time data is meeting these performance metrics. The NWLON application has a requirement that 95% of the near real-time data be acquired, be of good quality, and be displayed in real-time. For the fiscal year, 96% of near real-time data was meeting these performance metrics.

3.0 Financial Performance

3.1 Current Performance vs. Baseline

The current PORTS and NWLON financial performance, as shown in Figure 2, compares the actual cost of the program compared to an annual spending plan.

Monies were budgeted in five major areas: Hardware, Software, Contracts, IT Security and Government Staff. The deviation in deviations in Hardware and Software were due to additional funding for unplanned hardware and database licensing purchases. Also, due to a security incident it was required to purchase replacement equipment. In addition, the increase in Contracts was due to an increase of services for supporting the PORTS & NWLON system. The deviation in Government staff was the result of being down 1.5 Government positions at the end of FY2010.
3.2 Performance Measures

During the reporting year, financial performance of the PORTS and NWLON Major Application is achieved through divisional monthly reviews and quarterly reviews with the Deputy Director of CO-OPS in examining quarterly variance measurements of what was planned for in the yearly spending plans and what was actually spent. By creating spending plans prior to the beginning of each fiscal year, it is possible to track spending for each month down to the object class level. In addition, by submitting anticipated major procurements early in the planning process, it is possible to track spending more closely.

3.3 Cost Benefit Analysis

Three economic benefit reports were completed, Columbia River PORTS in 2010, Tampa Bay PORTS in 2005 and Houston/Galveston Bay PORTS in 2007, which showed the economic benefits derived from each the PORTS. The reports describe the estimated benefits in terms of dollars to the extent possible, and they also describe non-quantifiable benefits.

Sources of economic benefit include:
- Greater draft allowance/increased cargo capacity and reduced transit delays for commercial maritime transportation (water level information)
- Reduced risk of groundings/collisions for maritime traffic (currents and wind information)
- Enhanced recreational use of the Bays by boaters, windsurfers, fishermen, etc. (winds, weather forecasts, and other information)
- Improved environmental/ecological planning and analysis, including hazardous material spill response

Columbia River PORTS economic benefit report (June 2010)

The report estimates suggest that about $4.9 million in direct annual economic benefits can be attributed to PORTS® data on the Columbia River with a reasonable degree of confidence. Another $2.5 million in annual benefits are less easily traced but may be linked to PORTS®; and an additional $0.1 million could potentially be realized with the full utilization of PORTS® data. The report’s best estimate of the presently realized quantifiable benefit from Columbia River PORTS® data is about $7.4 million/year. This estimate should be interpreted as a lower bound on total benefits flowing from PORTS® data, since not all uses of these data can be quantified.

Most of these benefits are in the nature of avoided costs (increased producer surplus, or profit) for commercial maritime operations on the Columbia River, primarily the operators of dry bulk vessels carrying export cargos of grain and other products, and container vessels.

Houston/Galveston Bay PORTS economic benefit report (March 2007)
URL to report: Estimating Economic Benefits from NOAA PORTS Information - A Case Study of Houston/Galveston

The report estimates suggest that some $11.9 million in direct annual economic benefits can be attributed to PORTS data in the Houston/Galveston area with a reasonable degree of confidence. Another $2.2 to $3.7 million in annual benefits are less easily traced but may be linked to PORTS; and an additional $1.8 to $2.8 million could potentially be realized with the full utilization of PORTS data. Thus, our best estimate of the presently realized quantifiable benefit from Houston/Galveston PORTS data is $14.1 to $15.6 million. This estimate is best interpreted as a lower bound on total benefits flowing from PORTS data, since not all uses of PORTS data can be quantified.

Most of these benefits are in the nature of avoided costs (increased producer surplus, or profit) for commercial operations in the Houston Ship Channel and adjacent waterways and approaches, and avoided costs or increased consumer surplus, including non-market benefits, for recreational users of Galveston Bay.

Tampa Bay PORTS economic benefit report (July 2005)
URL to report: Estimating Economic Benefits from NOAA PORTS Information - A Case Study of Tampa Bay

The report estimates suggested that $2.4 to $4.8 million in direct annual economic benefits can be attributed to PORTS data in the Tampa Bay area with a reasonable degree of confidence. Another $2.2 million in annual benefits are less easily traced but may be linked to PORTS; and an additional $2.2 million could potentially be realized with the full utilization of PORTS data. Thus, the best estimate of the 2005 realized quantifiable benefit from Tampa Bay PORTS data is $4.4 to $7.0
million. This estimate is best interpreted as a lower bound on total benefits flowing from PORTS data, since not all uses of PORTS data can be quantified.

Most of these benefits are in the nature of avoided costs (increased producer surplus, or profit) for commercial operations and avoided costs or increased consumer surplus, including non-market benefits, for recreational users of the Bay.

3.4 Financial Performance Review

Financial performance is typically subjected to a periodic review for reasonableness and cost efficiency. Monthly budget reviews are held with the program manager, CORs and contract managers to ensure contracts are within cost and on schedule. Quarterly budget reviews are held between the Division Chief and the Deputy Director to ensure that project spending is reasonable. Monthly reports from contractors are required to ensure the Government has the information it needs to evaluate cost performance. A detailed review of work and priorities is undertaken if cost is significantly above base lined values. Also, any necessary corrective actions are also identified and implemented.

4.0 Innovation to Meet Future Customer Needs

To better understand and meet customer needs, CO-OPS conducted a satisfaction survey to measure CO-OPS customer satisfaction with current products and services and to gain insight for future areas of focus. The results from the survey are posted on CO-OPS’ Publication web page (2009 CO-OPS Customer satisfaction survey (PDF)). The survey data were collected via links on NOAA Websites and email invitations from May 13-June 10, 2009. In total, 601 responses were collected. The highlights of the survey are that CO-OPS earned an overall satisfaction score of 82.1, which is strong and is much higher than the Aggregate 2008 Federal Government ACSI score of 68.9.
4.1 Number and Types of Users

The number (Figure 5) and types (Figure 6) of users continue to rise overall at the local, state and national levels as the importance of oceanographic information for coastal projects increases as well. Users of the PORTS and NWLON application primarily are ships underway and navigating through major U.S. harbors, U.S. Coast Guard, estuarine managers and other federal environmental agencies.

<table>
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<tr>
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<th>Visits</th>
<th>Bytes</th>
</tr>
</thead>
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<td>7,813.1G</td>
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<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>Peak on 09/02/10</td>
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<td></td>
</tr>
<tr>
<td>Average</td>
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<td>21,997M</td>
</tr>
<tr>
<td>Recent Average</td>
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<td>20,322M</td>
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<tr>
<td><strong>Monthly</strong></td>
<td></td>
<td></td>
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<tr>
<td>Average</td>
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<td>655.2G</td>
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<tr>
<td>Recent Average</td>
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</tr>
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<td>August 2010</td>
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<td>742.7G</td>
</tr>
<tr>
<td>July 2010</td>
<td>1,681,965</td>
<td>774.4G</td>
</tr>
</tbody>
</table>

*Figure 5 Number of visits to the CO-OPS tidesandcurrents.noaa.gov web site FY2010*
Figure 6 Types of visitors to the CO-OPS tidesandcurrents.noaa.gov web site for FY 2010

*Information from NOS Web Site Analytics and Guidance

As the number and types of users increase, their demand for denser coverage, new sensors, timeliness of data and new applications also increases. These issues pose interesting challenges for the PORTS and NWLON application. Issues that will have to be addressed are:

- How best to determine areas for improved coverage?
- How to meet the regional or local marine observational needs?
- How to improve data ingestion and delivery to users in a timely manner?
- How to ensure the data is adhering to established quality control measures?
Project to Address Challenge: *Expansion of area coverage for which water level and current data is provided by installing additional PORTS and NWLON stations*

To meet user’s needs, it is desired that by 2015 there will be approximately 500 NWLON station observing systems (300 stations associated with NWLON and 200 cooperative regional and local stations) and to operate and maintain PORTS services at the top 150 U.S. seaports.

The challenge in expanding the coverage of the PORTS and NWLON application is in creating partnerships with regional and local harbor or waterway organizations, with the local community and implementation partnership effort based on extensive collaboration to identify and satisfy user needs in order to improve safety and derive economic benefits. PORTS comes in a variety of sizes and configurations, each specifically designed to meet local user requirements, and to take into account very real geographic and hydrologic differences between waterways. In the past, these types of partnerships have been very successful and will be continued to be pursued. To improve the coverage of NWLON stations, efforts are currently underway to identify those areas with under-coverage (not enough sensors in an area) and over-coverage (too many water level sensors too close together in an area). By identifying these areas, corrections can be made with local resource managers for improving coverage in an area.

During FY2010, all planned current meters for Mobile Bay, Lower Mississippi River and Sabine Neches PORTS were declared operational, completing these ports. In addition, two new visibility sensors were implemented and declared operational at Pinto Island and Middle Bay Port, AL. The Middle Bay Port sensor is located on the mid-western shore of the Bay, next to the Theodore Shipping Channel. The first visibility sensor was installed at Pinto Island, AL. These two seniors completes the effort to equip the PORTS® with visibility sensors and to integrate the new data type into systems operated by the Center for Operational Oceanographic Products and Services. Visibility data in Mobile Bay are critical, as the Bay is susceptible to heavy fog at the upper end of the Bay beginning in the fall and in the middle of the Bay during the winter. The Alabama State Port Authority and the Mobile Weather Forecast Office guided site selection for both sensors. This effort was made possible by partnerships among CO-OPS, the National Weather Service, Office of Coast Survey, and Alabama State Port Authority, and Alabama Power.

In the fourth quarter of FY2010, CO-OPS incorporated wave data collected by the Coastal Data Information Program (CDIP) managed by the U.S. Army Corps of Engineers into PORTS® products. Four wave stations have been added to PORTS® products: San Francisco Bar, CA (San Francisco Bay region), San Pedro, CA (Los Angeles/Long Beach region), Clatsop Spit, OR (Lower Columbia River region) and Cape Henry, VA (Chesapeake Bay South region)

Project to Address Challenge: *Expansion of on-line product suite*

NOAA's National Ocean Service (NOS) has upgraded its **Chesapeake Bay Operational Forecast System (CBOFS)**. The new higher resolution CBOFS is now based on a three-dimensional ROMS model that runs on NOAA's High Performance Computers (HPC). In addition to providing water level nowcast
and forecast guidance, the new CBOFS now also provides currents, water temperature and salinity as well as interpolated winds from National Weather Service products. CBOFS runs four times per day and generates 6-hour nowcasts and 48-hour forecast guidance. CBOFS products include time series graphics at station locations and aerial animations of the whole Chesapeake Bay for all five parameters (wind, water level, currents, temperature and salinity).

NOAA’s National Ocean Service (NOS) has developed a Delaware Bay Operational Forecast System (DBOFS). DBOFS is based on a three-dimensional ROMS model that runs on NOAA's High Performance Computers (HPC). DBOFS provides water level, currents, water temperature and salinity nowcast and forecast guidance as well as interpolated winds from National Weather Service products. DBOFS runs four times per day and generates 6-hour nowcasts and 48-hour forecast guidance. DBOFS products include time series graphics at station locations and aerial animations of the whole Delaware Bay for all five parameters (wind, water level, currents, temperature and salinity).

High Frequency Radar Surface Current Mapping (HFSCM)
HFSCM project’s aim is to develop an operational web-based product for surface current data derived from high-frequency surface current mappers. In FY 2010, the CO-OPS HFSCM development team developed the real-time HF Radar data processing system including total vector generation, current time series harmonic analysis and prediction. The web interface uses Google Map to showcase many features, including the capability to show Vector-specific information (location, speed, and direction) on screen using the cursor to hover over the tidal current vectors. Users can also view the surface current time series, tidal current ellipses for any grid point. Users can also zoom to areas of interest within the larger map interface and see the animation of a series of images (radial vector, total vector, etc) for a user-specified period of time. The historical HF Radar data processing system is being developed to allow advanced users to data processing with customized parameters. The HFSCM project will benefit the Marine Transportation System. For example, the tidal current vector maps would allow commercial shipping interests to safely and efficiently schedule port arrivals and departures that would optimize transit times and thus improve their overall vessel transit planning.

In addition, at the end of FY2009, CO-OPS obtained software development services to construct a World-Wide-Web-accessible set of tools to improve data processing capabilities for permanent CO-OPS stations and the processing of data for temporary stations. These software products will provide CO-OPS and CO-OPS contractors with the capability to load data into the CO-OPS database and to process the data according to established specifications using CO-OPS provided programs. These services are necessary in order to carry out tasks related to the American Recovery and Reinvestment Act of 2009 (ARRA). Work on this contract began at the start of FY10 and is progressing according to schedule. An extensive requirements specification was developed, reviewed and approved by a committee of stakeholders. A detailed design was then prepared and approved by the end of FY10. This new system is being constructed using advanced technologies that will form the basis of CO-OPS processing application architecture for the future. These technologies have been selected by performing market analyses, in-depth discussions across functional groups and the development of prototypes. System construction will begin in FY11 with implementation scheduled during FY12.
**Historic Current Survey Data**

Data collected during temporary current-meter deployments for surveys have been made available through the CO-OPS web-site. Data from approximately 400 surveys collected since 1998 are available for plotting and downloading.

**Project to Address Challenge: Maximize capabilities of data ingestion and data storage**

The Data Ingestion System (DIS) is a vital component of PORTS and NWLON infrastructure and is responsible for acquisition and processing of our real-time data, as well as storing data in our database. Any problems in our DIS, either data outages or data latency, impacts our stakeholders directly. The stability and performance of the DIS had declined over time as the volume of data increased and the code was patched to keep up with changes in the dataflows and the computing environment. During FY2010, CO-OPS has made extensive improvements to our DIS that has resulted in greatly improved performance, reliability and stability. The number of operational problems with the system has been reduced considerably and the overall product availability has increased by as much as 10%.

In addition, a new software application, the CO-OPS Data Ingestion System (CDIS) Monitor has been developed, which monitors the major components of the DIS in real-time and provides a simple, intuitive interface in the form of temperature readings. Users can easily determine if there are any problems in the DIS and can narrow down the particular component running into problems. The deployment of this tool has significantly reduced the amount of time needed to respond to any operational incidents.

**Project to Address Challenge: Increase data available to the public that has been quality controlled**

CORMS (Continuously Operational Real-Time Monitoring System) is a manned quality control support system which provides 24 hour a day, 7 day a week quality control monitoring of real-time marine environmental data to ensure the availability and reliability of this data before application of the data by real-time users such as the maritime navigation community. Currently, CORMS performs minimal quality control checks on discrete 6-minute samples and flags these values for further investigation and action by watch standing personnel. As the amount of data being acquired in real-time has increased and the need exists for more sophisticated quality control checks to better ensure reliability, CO-OPS has embarked on the development and implementation of a new toolset for CORMS known as CORMS AI (Artificial Intelligence). CORMS AI will: 1) employ rule- and case-based logic to monitor the status of CO-OPS data acquisition and dissemination networks and perform real-time quality control on collected data; 2) notify watch standing personnel of communications outages and suspect data, and; 3) identify potential mitigating actions to correct the reported problem.

In FY2010, CO-OPS created an enhanced version of CORMS AI that includes a new, more robust user interface, improved quality control algorithms, issue identification notification and management. In addition, the included sensors were expanded to cover all types including current meters.

The new features of CORMS/AI are: (1) evaluation and reporting on instances where standard deviation and outlier values for water level data exceed an established threshold; (2) allowing...
authorized users to view, and/or edit quality control parameters used by the application; (3) monitoring and reporting on Current meter data quality and availability; (4) addition of Technician Roles where the engineer personnel can log into CORMS/AI for the purposes of investigating reports of non-configured sensors; (5) the ability to monitor past communications performance and (6) allowing for the comparison between pressure values for dual Paros sensors to monitor and report on instances where the pressure difference exceeds a threshold.

4.2 New Technological Growth Areas

CO-OPS growth in new areas (National HF Radar Program, mobile devices PDAs, etc.) will require monitoring infrastructure and modeling enhancements. CO-OPS is assuming the lead for providing the NOS contribution for the operational coastal component of the U.S. Integrated Ocean Observing System (IOOS). Expanding the suite of sensors (parameters and quantity) will require a corresponding expansion in CORMS real-time quality control, commercial communications, data and information management, and product development. Expanding the number and function of operational models will require additional partnerships with both the academic and scientific consulting communities.

The business model of CO-OPS is evolving to include increasing amounts of field operations by contractors to collect and process water level data. To support this evolution CO-OPS is constructing a web-accessible system that will be used by contractors to perform work remotely and by CO-OPS personnel to manage these contract activities. Work on this contract began at the start of FY10 and is progressing according to schedule. An extensive requirements specification was developed, reviewed and approved by a committee of stakeholders. A detailed design was then prepared and approved by the end of FY10. This new system is being constructed using advanced technologies that will form the basis of CO-OPS processing application architecture for the future. These technologies have been selected by performing market analyses, in-depth discussions across functional groups and the development of prototypes. System construction will begin in FY11 with implementation scheduled during FY12.

CO-OPS continued to leverage its large collection of observations by using them to develop scientific analyses of interest to the public such as technical Reports NOS CO-OPS 053 ‘Sea Level Variations Of The United States 1854-2006’ and NOS CO-OPS 056 ‘Effects of the November 2009 Nor'easter on Water Levels’ which were among the most downloaded publications in FY2010.

The delivery of real-time products and services is result of multiple teams working together across CO-OPS Divisions, and one metric of our collective effectiveness is the percentage of “good quality” data delivered daily to users in a timely manner. In FY 2010, CO-OPS implemented the Instrument Performance Statistics (IPS) application to measure CO-OPS real-time data quality and quantity. IPS generates operational statistics which are discussed weekly at Senior Management Team meetings. The statistics are viewed as a measure of interoperability between CO-OPS teams, not as reflective of specific group's performance. Attention to IPS is another example of CO-OPS’ commitment of strengthening our legacy of accurate and reliable oceanographic information.
4.3 Improving IT infrastructure

CO-OPS must maintain computational equilibrium with other IT intensive organizations. Further, the office network infrastructure must allow seamless capability to fully utilize computational capacity. CO-OPS will stay current with IT hardware and software technology in general and solicit and engage specialists in IT fields such as AI that can apply the technology to solve real world operational problems.

As the CO-OPS inventory of Unix/Linux based servers has aged and increased in number, the maintenance of these servers has become more and more problematic. The need to standardize and control the configuration of these servers has also grown considerably with the increased emphasis on security. This year, ISD has executed a re-engineering effort of our entire server architecture. This effort will allow CO-OPS to keep up to date with current IT hardware, software, and network trends, resulting in better IT security, hardware reliability, and overall architectural integrity. We now have documentation and scripts in place to rebuild any server.

CO-OPS has successfully rebuilt over half of its operational Linux based network in order to migrate from older versions of Red Hat Enterprise Linux such as 3 and 4 to the newest release, 5. In the process of this migration many applications were ported, monitoring systems redesigned from the ground up, and even a new centralized authentication and authorization scheme has been implemented. An additional benefit of this effort is that by analyzing each server, we were able to reduce network traffic by eliminating unnecessary transfer of data thus improving overall performance.

The seventh floor server room is a key IT asset for CO-OPS. Over time, the profusion of server, network and other equipment migrations had left the room in a difficult to manage state. During FY2010, considerable effort was expended to clean-up and reorganize the various servers, racks and cabling thus moving from chaos to order. In addition to the physical clean-up, a new sub-net architecture was implemented to facilitate the NOAA Backbone Network Upgrade.

During FY2010, CO-OPS began execution of a project to reengineer the Data Ingestion Subsystem (DIS). Data is ingested into both the water level and meteorological database (DPAS) and currents data database (NPDB). The DPAS DIS is responsible for the retrieval, decoding, quality control, and database storage of all water level and meteorological data produced by NWLON and PORTS stations. The NPDB DIS is responsible for the retrieval, decoding, quality control, and database storage of all current data observed at PORTS stations and surveys.

The goals of this project are to:

- Fully and formally specify the requirements of the Data Ingestion systems for DPAS and NPDB.
- Integrate the two data ingestion systems into a cohesive software unit.
- Re-engineer and/or rewrite the data ingestion software so that it is reliable, scalable, and maintainable.
- Decrease data latency and increase desirable performance characteristics (real-time, scalable, robust, maintainable) in the data ingestion system.
• Generate SOPs for the entire data ingestion process and facilitate the integration of CO-OPS software with defined, reliable APIs.

A first release of improvements was issued in May. This release included:
- Updated business rules to accommodate new DCP configurations in the field
- New procedures to rebuild the DIS server in case of emergencies
- Identification and solution of the highest priority issues

The second release was issued in June and included:
- Redundant collection of non-current meter data into the National Ports database was stopped
- Improved insert logic was implemented resulting in significant performance improvements
- Addressed an issue with the decoder module that occasionally halted the system

The results of these two releases result in significant instrument performance statistics increases. The performance metrics and statistics provide information on how data ingestion is performing with respect to factors such as number of satellite messages retrieved, efficiency in ingesting data sets, number of gaps, and latency. For example, in Figure 7, from Oct. 2009-Aug. 2010 we see increases of improved performance of 14.92% for water level, 16.93% for water temperature, and 16.57% for air pressure.

<table>
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<tr>
<th>Month</th>
<th>Water Level</th>
<th>Water Temperature</th>
<th>Conductivity</th>
<th>Wind</th>
<th>Air Temperature</th>
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<th>Humidity</th>
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<td>84.01</td>
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<td>93.57</td>
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<tr>
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<td>87.97</td>
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<td>80.01</td>
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Figure 7 Instrument Profile Statistics October 2010 (before fixes) to August 2010 (after fixes).

4.4 Funding Levels

Recent trends in government spending indicate that agencies should not expect significant increases in their budgets. This, coupled with the requirement to accommodate more users and incorporate evolving technology, will force the program to find efficiencies and to do more with the same amount of resources.

Project to Address Challenge: Leveraging external resources

There are countless benefits with doing business in concert with partners. Shared ownership of an activity leverages the resources (including intellect) of all partners. In addition, non-Federal partners have license to influence the legislative process. Partnerships are resource intensive. Considerable effort goes into the partnership process. CO-OPS strengthens core capabilities through additional partnership links with outside groups including private organizations. CO-OPS is a highly leveraged organization that is in the business of partnering with other parties to meet the needs of a broader
user community. The strategy for the future includes building upon and enhancing the existing NOS operational infrastructure and culture which has emphasized cross-program and cross-NOAA integration. CO-OPS mission growth has been accomplished through advances in technology and outsourcing, while streamlining the number of personnel required maintaining the internal core workforce capability.
Annex A

System Interconnections/Information Sharing

The System Interconnection/Information Sharing table below provides a list of systems with which NOAA6205 has an interconnection and from which NOAA6205 receives certain network services. These systems provide services not provided within the boundaries of NOAA6205.

NOAA6001 provides network services, such as Active Directory Services and Domain Name Services. NOAA6001 interfaces with NOAA0200 (Network Operating Center) to provide additional network services such as Internet access. The other systems listed below interface with NOAA0200 to provide their specific service as described in the table. A Service Level Agreement exists for NOAA0200 and a System Services Agreement exists for NOAA6001, both of which satisfy the requirements by DOC and NOAA for any connections that exist between NOAA6205 and any of the other NOAA systems to which NOAA6205 interconnects. The actual agreements for NOAA6205 SLA for NOAA0200 and NOAA6205 SSA for NOAA6001 are on file.

In addition to these interconnections, CO-OPS utilizes a VPN over the Internet to connect the Chesapeake office to the Seattle and Silver Spring offices. By using a VPN, CO-OPS ensures that all data is encrypted while in transit between the offices, and transmission integrity is maintained.

<table>
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<th>System Name</th>
<th>Organization</th>
<th>Type of Interconnection</th>
<th>ISA/ MOU MOA</th>
<th>Agreement Date</th>
<th>Authorizing Official</th>
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</thead>
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<td>NOAA6001 National Ocean Service (NOS) Enterprise Information System</td>
<td>National Ocean Service (NOS)</td>
<td>General Support System; Network (LAN) NOS SSMC Campus Backbone, AAMB LAN, and Secure Public Information Network (SPIN) (i.e., secure web farm network). Trusted connection. Located in a Government facility with both government and contractor personnel operating the IT systems.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200); July, 2006 (NOAA6001)</td>
<td>Elizabeth Scheffler, Chief Financial Officer, NOS</td>
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<tr>
<td>NOAA0200</td>
<td>National Oceanic and Atmospheric Administration (NOAA)</td>
<td>General Support System. NOAA SSMC Campus backbone operated by the NOAA NOC. Trusted connection. Located in a Government facility with both government and contractor personnel operating the IT systems. This system provides campus level infrastructure including LAN, WAN, and MAN networking, secure networking segments, and Internet access. This system provides campus level network monitoring, network management, NOAA enterprise VPN management and administration, campus level network help desk support and services.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200)</td>
<td>Joseph F. Klimavicz, Chief Information Officer, NOAA</td>
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<td>System Name</td>
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<tr>
<td>NOAA0100 NOAA Computer Incident Response Team (N-CIRT) Network</td>
<td>National Oceanic and Atmospheric Administration (NOAA)</td>
<td>General Support System. NOAA operated security monitoring for all Internet/Internet2 connection located in Silver Spring Metro Campus (SSMC) and NOAA wide computer incident response capabilities. Trusted connection. Located in a Government facility with both government and contractor personnel operating the IT systems. This system provides limited intrusion detection and monitoring services for NOAA networks scattered throughout the country. This system provides a centralize computer incident response support and reporting for all of NOAA.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200 ) July, 2006 (NOAA6001 )</td>
<td>Joseph F. Klimavicz, Chief Information Officer, NOAA</td>
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<td>NOAA030 0</td>
<td>NOAA Message Operations Center (MOC)</td>
<td>General Support System; NOAA Enterprise wide Messaging, LDAP Directory, and Calendar is operated by the NOAA MOC. It is a trusted connection and is located in a Government facility with government and contractor personnel operating the IT systems. This system provides NOAA wide email (as requested), LDAP Directory services, calendaring (as requested), and help desk services for supporting these functions.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200)</td>
<td>Joseph F. Klimavicz, Chief Information Officer, NOAA</td>
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<td>July, 2006 (NOAA6001)</td>
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</tr>
<tr>
<td>System Name</td>
<td>Organization</td>
<td>Type of Interconnection</td>
<td>ISA/ MOU MOA</td>
<td>Agreement Date</td>
<td>Authorizing Official</td>
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<tr>
<td>NOAA3100 Pacific Marine Environmetal Laboratory (PMEL) Local Area Networks</td>
<td>NOAA/OAR Pacific Marine Environmenta Laboratory (PMEL)</td>
<td>General Support System; Office of Oceanic and Atmospheric Research’s Pacific Marine Environmental Laboratory Campus Backbone Network located in Seattle, Washington providing local campus, Internet access, and computer security monitoring. It is a trusted connection and is located in a Government facility with government and contractor personnel operating the IT systems. This system provides infrastructure and networking services to the Seattle Campus. This system provides intrusion detection and network monitoring to all organizations connected to this network.</td>
<td>This document has not been signed by PMEL. For two months, repeated attempts were made to get a signature, but PMEL refused to sign.</td>
<td>June, 2006 (NOAA0200)</td>
<td>Eddie Bernard (Director, PMEL)</td>
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<td>System Name</td>
<td>Organization</td>
<td>Type of Interconnection</td>
<td>ISA/ MOU MOA</td>
<td>Agreement Date</td>
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<td>NOAA6201 CO-OPS</td>
<td>National Ocean Service (NOS)</td>
<td>General Support System; CO-OPS operated LAN located in Silver Spring Metro Campus (SSMC). It is a trusted connection and is located in a Government facility with government and contractor personnel operating the IT systems. The NOAA6201 provides underlying enabling infrastructure for NOAA6205, such as user workstations for analyzing and processing data.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200)</td>
<td>Michael Szabados (Director, CO-OPS)</td>
</tr>
<tr>
<td>NOAA5004 Data Collection System Automatic Processing System</td>
<td>National Environmental Satellite and Data Information Systems (NESDIS)</td>
<td>General Support System; NOAA5004 receives all GOES transmissions and retransmits the data to DOMSAT sites, as well as pushes the data to NOAA8870. It is a trusted connection and is located in a Government facility with government and contractor personnel operating the IT systems.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200)</td>
<td>Kathleen Kelly</td>
</tr>
<tr>
<td>System Name</td>
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<td>ISA/ MOU MOA</td>
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<tr>
<td>NOAA8870 National Weather Service Telecommunication Gateway</td>
<td>National Weather Service (NWS)</td>
<td>General Support System; NOAA8870 is the conduit over which all NWS data is transmitted. NOAA6205 provides water level and ancillary data to the NWS via NOAA8870. It is a trusted connection and is located in a Government facility with government and contractor personnel operating the IT systems.</td>
<td>NOAA6205 SLA for NOAA0200; NOAA6205 SSA for NOAA6001 (separate files from this plan)</td>
<td>June, 2006 (NOAA0200) July, 2006 (NOAA6001)</td>
<td>Larry Curran</td>
</tr>
</tbody>
</table>
Annex B

The following management control processes are implemented:

**Operational Monitoring** – The Continuous Operational Real-time Monitoring System (CORMS), a sub-system within the PORTS and NWLON Application, is primarily intended to provide quality assurance and monitoring of sensor data before application of the data by real-time and near real-time users. It is a decision support system which provides data communications, data analysis, system monitoring and notification support to a variety of users. CORMS provides seven days a week, twenty four hours a day monitoring and quality control of sensors and data in order to insure the availability, accuracy, and quality of tide, water level, current, and other marine environmental information. CORMS is intended to identify invalid and erroneous data and information before application of the data by the real-time and near real-time users. The Center for Operational Oceanographic Products and Services (CO-OPS) is responsible for the quality of the real-time data provided to local users in support of navigational safety. The system provides 24 x 7 personnel coverage.

**Weekly Status Meetings** – Twice a week, the Operations Manager meets with other divisional representatives within CO-OPS to gather information of the operational readiness of the PORTS and NWLON measurement systems in the field and the components within the PORTS and NWLON application. The information provided may address issues relating to station outages, data availability, data quality control and station repair status. In addition to these meetings, the Operations Manager provides senior management with weekly briefings on the operational readiness of the PORTS and NWLON system.

**Configuration Control and Management** – Configuration control is the systematic process of maintaining the formally established baseline identification and regulating all changes to the baseline. Configuration control is achieved through an ordered process of proposal, evaluation, approval or disapproval, and implementation of approved changes to a configuration item (CI) after a configuration baseline has been established. Configuration control maintains the integrity and continuity of the design, engineering, and cost trade-off decisions which are recorded, communicated, and controlled. Configuration control prevents unauthorized, unnecessary, or marginal changes, while expediting the approval and implementation of those that offer significant benefits. Changes to the CO-OPS baseline is monitored and implemented by the groups and policies listed: CO-OPS Web Committee (CWC), Software Configuration Control, Configuration Audits and Reviews, Functional Configuration Audit (FCA) and Physical Configuration Audit (PCA). Depending on the size and complexity of the system under control, other audits may be conducted to help ensure complete traceability of the requirement throughout the life cycle.

Configuration and Management (CM) is applied over the life cycle of a product (hardware and software) and provides visibility and control of its performance and functional and physical attributes. CM verifies that a product performs as intended and is identified and documented in sufficient detail to support its projected life cycle. Implementation of CM procedures and guidance is done in such a way as to complement other CO-OPS processes already established such as the planning and financial processes; systems integration management (SIM); and operational systems and technical architecture developments. The CM which is followed is the Department of Energy’s Systems Engineering Methodology.
**Project Process Improvements** – CO-OPS has implemented a new process to facilitate the use of standard processes in the development and operation of applications such as the PORTS and NWLON application. This process is called the Reliable Operating System (ROS). It is the roadmap for operating with a systematic approach to continue CO-OPS’ long tradition of providing critical products and services. The ROS provides checks and balances as well as clearly defines roles and responsibilities. It supports wise decision-making and efficient use of scarce federal resources. Most importantly it ensures:

- Systems that deliver products on time and within budget
- Systems that deliver consistently accurate data
- Systems that work as designed
- Systems that work upon installation
- Systems that operate at a high level of performance
- Systems that operate with a minimum of unscheduled repairs

To assist in implementing the ROS, this past fiscal year, a major effort was put forth in finding, updating, categorizing and publishing documents related to the PORTS and NWLON application from station reconnaissance, sensor installation, data ingestion, decoding, and quality control to data product outputs.

**Monthly Budget Reviews** – Monthly budget reviews are held with Division Chiefs, product managers, project managers and CORs to ensure products and their associated projects are within budget and on schedule. Monthly reports from contractors and their project managers are required to ensure that the Government is receiving the information and deliverables as stated in the contracts helps the Government with cost performance evaluations.

**Quarterly Organizational Budget Reviews** – Quarterly budget reviews are held between the organizational budget manager and the Division Chiefs to ensure that each division is meeting their quarterly objectives, their projects are on time and within costs and to identify any resources that may or may not be needed.