MONTHLY MONITORING REPORT

World Trade Center Port Authority Trans-Hudson Terminal
PORT AUTHORITY OF NEW YORK AND NEW JERSEY
New York, New York

July 2015

PMOC Contract Number: DTFT60-14-D-00010
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Cover: *Smoke purge fan and ductwork at the North Projection Fan Plant.*

DISCLAIMER

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For projects funded through FTA's Lower Manhattan Recovery program, the FTA and its Project Management Oversight Contractor (PMOC) use a risk-based assessment process to review and validate a project sponsor's budget and schedule. This risk-based assessment process is a tool for analyzing project development and management. Moreover, the assessment process is iterative in nature; any results of an FTA or PMOC risk-based assessment represent a "snapshot in time" for a particular project under the conditions known at that same point in time. The status of any assessment may be altered at any time by new information, changes in circumstances, or further developments in the project, including any specific measures a sponsor may take to mitigate the risks to project costs, budget, and schedule, or the strategy a sponsor may develop for project execution.

Therefore, the information in the monthly reports may change from month to month, based on relevant factors for the month and/or previous months.

REPORT FORMAT AND FOCUS

This monthly report is submitted in compliance with the terms of the Federal Transit Administration (FTA) Contract No. DTFT60-14-D-00010, Task Order No. 006. Its purpose is to provide information and data to assist the FTA in continually monitoring the grantee's technical capability and capacity to execute a project efficiently and effectively, and hence, whether or not the grantee continues to receive federal funds for project development.

This report covers the project management activities on the Permanent World Trade Center (WTC) Port Authority Trans-Hudson (PATH) Terminal (Hub) project, conducted by the Port Authority of New York and New Jersey (PANYNJ) as grantee and funded by the FTA's Lower Manhattan Recovery Office (LMRO).

EXECUTIVE SUMMARY

On July 27, chilled water supply from the Central Chiller Plant in the west bathtub to the Central Fan Plant in the east bathtub was initiated via the temporary connection of these two facilities using supply and return piping that was recently run through the station construction areas. This temporary piping will remain in service until the permanent utility tunnel is fully constructed and equipped. Going forward, the delivery of the chilled water will allow cooling of equipment rooms and some of the occupied spaces throughout the PATH Hub project where spot coolers and other temporary cooling measures have been in use. Such utilization is expected to be phased in over an extended period of time, although World Trade Center Construction (WTCC) is planning to begin using this initial cooling capability at selected critical locations during the first week of August 2015.

Also during July, multi-shift work at Platforms C and D continued. Demolition of temporary Platform C and the mezzanine above that platform advanced towards completion, and rock excavation for the portion of the utility tunnel to be built under new Platform C was begun mid-month.

Project Description

The WTC PATH Hub Terminal serves the PATH electrified rail transit system in Lower Manhattan. The PATH Hub is an extensive underground complex of pedestrian corridors and train station facilities that will replace the original WTC PATH Terminal destroyed by terrorist attack on September 11, 2001.

Construction Agreement (CA)

The CA was signed by the LMRO on April 25, 2006. A Revised and Restated Construction Agreement (RRCA) was executed on September 18, 2012. [redacted]

[redacted]

Quarterly Progress Review Meeting (QPRM)

No second quarter 2015 QPRM will be held. Any project issues will instead be addressed in the regularly held bi-weekly progress review meetings, or in the periodically-held executive meetings. The next QPRM will address the third quarter of 2015 and is scheduled to be held during November 2015.

Design Activity

The designer continues to provide construction support services, including the review of contractor shop drawings and other submittals.

Procurement Activity

WTCC has completed all planned procurements for the PATH Hub project. However, change orders continue to be issued as necessary under the active construction contracts.

Construction Activity

During July, supply of chilled water from the Central Chiller Plant to the Central Fan Plant was initiated via temporary piping that had been installed through the Platform B, C and D areas. Also during the month, rock excavation started in the Platform C work area at the future location of the final section of the utility tunnel and adjacent ventilation tunnel.

In the east bathtub, preparations continued for the planned opening of the Early Access Pedestrian Corridor and the opening of two new PATH entrances, one at Vesey Street and the other at Liberty Street. WTCC has projected that these facilities will be available for pedestrian and passenger use by the end of the summer of 2015.

Schedule

In *July* 2015, WTCC released Integrated Master Schedule (IMS) *80* (with a data date of *June* 1, 2015), (b) (4) [redacted] WTCC achieved the "Platform B Operational" milestone event on May 7, 2015, which represents an approximate five-month delay from WTCC's original projection for achieving that milestone. (b) (4) [redacted] WTCC is expected to release IMS *81* (with a data date of *August* 1, 2015) at the beginning of *September* 2015. (b) (4) [redacted]

Cost Data

WTCC submitted its monthly cost model revision on *July 31, 2015*. [redacted]

Risk Management

To provide an improved project risk tool, the FTA, the Project Management Oversight Contractor (PMOC), and WTCC completed the Project Execution Plan (PEP) in conjunction with the execution of the RRCA on September 18, 2012. That document sets forth a series of project review points with specific project milestones that must be met in order to trigger the release of defined amounts of risk contingency funds to the grantee. As each PEP milestone event is achieved, the PMOC updates the contingency drawdown curves to reflect the evaluation of the project's residual risks and the potential risk retainage release amounts associated with each of the remaining PEP milestones. During May 2015, the PEP milestone defined as "Platform B Operational" was achieved, triggering the initiation of another partial release of risk retainage. [redacted] In May, the FTA, the PMOC, and WTCC also met in a workshop session to collaborate on identifying and assigning risk retainage release values to the remaining PEP milestones as well as to identify potential additional milestones. That dialogue was continued in mid-June when WTCC provided other project milestones as candidates to be added to the PEP and those suggestions remained under consideration at the end of the month. [redacted] Top risk drivers are mentioned within the body of the monitoring report, below.

Technical Capacity and Capability Review (TCCR)

The TCCR will be updated as necessary in conjunction with the update of the PEP.

Project Management Plan (PMP)

An updated draft of WTCC's Operations Management Plan, a PMP sub-plan, was submitted in August 2014, but it was found to lack essential elements. The grantee *submitted* an updated version of the Operations Management Plan *in mid-July. The PMOC is currently reviewing that document and compiling comments.*

Project Quality Assurance

During Ju*ly* 2015, WTCC Quality Assurance (QA) completed *seven* oversight audits that included reviewing the Construction Manager (CM) QA's field audits and performing its own field construction audits. The Ju*ly* 2015 audit total reflects the *seven* WTCC QA audit reports that were issued and received at the time this monthly report was drafted. No quality issues were identified for corrective action.

Site Safety

The WTC PATH Hub project has established its own project safety performance goals for Total Case Incident Rate (TCIR) and Lost-Time Incident Rate (LTIR) of less than 5.0 and less than 2.0, respectively. In *June* 2015, the project had three recordable incidents and one lost-time incident, resulting in a monthly TCIR of *4.92* and an LTIR of *1.64*, based on *121,926.0* hours worked. Safety initiatives *that took place in July* are discussed in the project monitoring section of this report. The *July* 2015 safety data for the project was not fully available when this report was drafted but is expected to be available after mid-*August* 2015.

Issues/Problems/Suggestions

During July, difficulty in dissipating heat build-up in various equipment rooms and other PATH Hub project spaces continued. The utilization of temporary spot coolers at those spaces was somewhat effective but not at all of the locations where temporary spot coolers had been deployed. At the end of the month, the first delivery of chilled water from the Central Chiller Plant to the Central Fan Plant occurred via temporary piping through the Platform B, C, and D areas. During August, WTCC plans to distribute that chilled water downstream on an expedited basis, in stages. This expedited distribution of chilled water will be dependent upon the readiness of the downstream cooling systems to be placed into operation and assessments of the need in the spaces they serve.

Coordination of the work both within and immediately outside of the oculus structure continues to challenge WTCC and the CM. They continue to weigh the competing needs for access to work areas and make decisions regarding access based on the relative importance of the involved construction activities.

MONITORING REPORT

A. Project Description

The PATH Hub facility is an intermodal terminal serving the PATH electrified heavy rail transit system, which has a total of 13 PATH stations in New York and New Jersey. When completed, the PATH Hub will connect to 11 New York City Transit (NYCT) subway lines in Lower Manhattan. The PATH Hub will include a platform level, associated mezzanine and concourse levels called the PATH Hall, and a terminal building called the Transit Hall, or oculus, with north-south and east-west pedestrian connections to the NYCT subways, the World Financial Center, and WTC above-grade site development. It will be a permanent replacement of the original WTC PATH Terminal complex destroyed by the terrorist attack on September 11, 2001.

B. Project Status

Construction Agreement

The CA was signed on April 25, 2006. An RRCA was executed on September 18, 2012. (b) [redacted] (4) [redacted] The FTA approved WTCC's February 18, 2014 Recovery Plan 02, thereby establishing a revised RCD of December 31, 2016. Also included in the recovery plan was a change in WTCC's forecasted substantial completion date to December 31, 2015. WTCC submitted Recovery Plan 03 on April 15, 2015. In late April, the PMOC recommended acceptance of Recovery Plan 03, which maintains the PATH Hub project's substantial completion date and RCD from Recovery Plan 02. On June 4, 2015, the FTA approved Recovery Plan 03. Recovery Plan 03 identifies new target dates for two of the RRCA milestones, extending the date for "Transit Hall Superstructure Complete (Glazing)" from January 13, 2015, to August 31, 2015, and extending the date for "Mezzanine Structural Steel at Platform C Substantially Complete" from June 30, 2015 to October 31, 2015. *During July, WTCC acknowledged the need for Recovery Plan 04 for those RRCA milestones that were not met over the prior 3-month period, and for those upcoming milestones that are no longer achievable.*

Quarterly Progress Review Meeting

No second quarter 2015 QPRM will be held. Any project issues will instead be addressed in the regularly held bi-weekly progress review meetings, or in the periodically-held executive meetings. The next QPRM will address the third quarter of 2015 and is scheduled to be held during November 2015.

WTC Site Master Plan

WTCC's latest site master plan is Master Plan Version 11, dated October 10, 2013. This was re-confirmed with WTCC during June 2015.

Environmental Compliance

(Reported on separately by FTA's LMRO.)

Design Support During Construction

The designer continued providing post-award design support services for the PATH Hub construction, including responding to contractor Requests for Information (RFIs) and providing design certifications for completed elements of construction. The designer also continues to prepare and issue addenda that incorporate multiple, issued RFI responses in which the designer authorized changes to the base design documents that bring those documents into conformance with the RFI responses. The CM tracks contractor RFIs for each of the prime contractors working on the project. The CM, in concert with WTCC, then prioritizes the order in which those RFIs should be answered by the designer based on their relative importance in advancing project work.

Construction Status

Oculus Steel: *July activity by the oculus steel contractor continued to focus on the repair of the surfaces of oculus steel elements, painting of the oculus steel, and sanding and repainting of the oculus rafter elements, which had become discolored. Each of these activities was advanced to the extent possible given the contractor's limited access as a result of work being performed by other PATH Hub project contractors working in the same locations. A limited second shift and extended workday effort was also utilized by the oculus steel contractor during the month. Other impediments to the work included the restrictions on coating application based on dew point and humidity readings, and the limited vertical reach of the available boomlifts. Notwithstanding these issues, the oculus steel contractor was able to advance its work: Rafter sanding crews moved from east to west on the south side of structure, and steel surface repairs, both on the interior and exterior of the structure, also advanced. Rafter repainting also made good progress. On the south side of the oculus, the re-painting, which was advancing from the shortest rafters at the eastern end and moving westward, approached the centerline of the structure. This amount of re-painting is estimated to represent approximately 30 percent of the total rafter surface area to be re-painted on that side of the oculus. On the north side of the oculus, starting from the longest rafters at the eastern end and also moving westward, the re-painting was completed on the longest ten rafters, which is estimated to be approximately 33 percent of the rafter surface area to be re-painted on that side.*

Oculus Curtain Wall: *During July, the curtain wall contractor continued working on the glass panel portion of the curtain wall system. With all of the 772 glass panels set into position, the contractor concentrated on installing gaskets, caulking the glass panels, and installing exterior insulation. Currently, approximately 75% of the interior metal side panels have been attached although caulking of the joints is lagging behind that activity. The first exterior metal side panels were fastened into position on the south side of the oculus just before the end of the month.* None of the 112 WT-3 metal panels that also serve as part of the curtain wall system near the oculus

roof level, have yet been placed; the placement of these metal panels is awaiting the performance of other prerequisite work. *Also during July, the contractor installed most of the interior lighting-support sill plates and continued* with *the* installation of the waterproofing system at the horizontal and vertical areas of the oculus steel arch elements. *By the end of the month approximately 50 percent of this work had been completed.* This system must be successfully tested before the installation of the WT-3 metal panels discussed above. *During July,* WTCC's special inspection consultant *continued* its *periodic* visual inspections of the glass panel *installations. To date, water and air intrusion testing has not commenced and cannot do so until the work necessary to seal the glass panels from air and water penetration has been completed.*

Oculus Skylight: During *July,* the oculus skylight contractor, which is the same contractor as the oculus curtain wall contractor, *completed the setting of all of the 40 skylight modules. At the four skylight* motor control centers (MCCs), *all of the required cables have been pulled and terminated. The contractor's subconsultant that is charged with synchronizing the skylight opening and closing operations mobilized to the site at the end of the month.*

Platforms C and D: *During July, the demolition of temporary Platform C was completed. The former mezzanine concrete slab has also been fully demolished and about 70 percent of its support steel has also been removed. The contractor set hammerhead column F06 in place and started the process of welding the column's components. The contractor also commenced excavation for the footing for hammerhead column FC04. In the Platform C/D work area, five more hammerhead columns have yet to be erected. At the south end of the work area, the contractor set in place additional sections of truss girders on previously installed hammerhead columns. These truss girders will support the precast concrete smoke purge ducts that also serve as the mezzanine floor slabs.* Also during *July, the contractor commenced rock excavation for the remaining portion of the utility tunnel under Platform C and Tracks 4 and 5. Both line-drilling and hoe ram activities were ongoing at the end of the month. Excavated materials* are *transported to the north end of the platform work area and removed through an access opening by crane.* The mechanical subcontractor *also completed* the first of two alternate temporary chilled water paths between the Central Chiller Plant and the Central Fan Plant by tying into the temporary 20-inch return chilled water line that is located between track 3 and 4. A 14-inch chilled water return line was installed that runs northward and down into the eastern portion of the utility tunnel, where it *was* connected to the permanent chilled water return line segment. This work eliminate*d* the leaks that had been identified during testing of the temporary 20-inch return line, by removing that segment of the return line from the chilled water loop. *Once the temporary lines were flushed, they were placed into service, and the initial delivery of chilled water from the Central Chiller Plant to the Central Fan Plant was accomplished during the last week of the month. Also in July, a second pair of temporary chilled water lines that run under Platforms C and D and tracks 4 and 5 was connected. Once these temporary lines are tested, flushed and placed into service, the temporary 20-inch overhead pipes and their associated steel support structure will be removed, allowing new platform and mezzanine construction to advance below.*

East Bathtub Mechanical, Electrical, Plumbing (MEP), and Fire Protection Work: During *July,* WTCC *made progress on implementing* an interim plan to place three of the eight new generators (No. 2, No. 4, and No. 7) online to meet the growing emergency power demands of the project, since those demands will no longer be sustained by the two fully-loaded temporary

emergency generators located at the North Temporary Access (NTA). *Testing of the three-generator configuration and associated paralleling gear was completed during the month. At the end of the month, WTCC also requested the issuance of a temporary permit to occupy/use (TPTO) for this generator arrangement. In addition, the sequence of operation in the event of a fire alarm initiation at the generator plant indicates that the generator plant fuel pumps and fan system must shut down. Implementation of this requirement was questioned by the Fire Alarm and Building Automation and Temperature Control contractors during the month and resolution remained outstanding at monthend. The welding into position of the smoke purge fans at the oculus roof level continued throughout July. The smoke purge fan liners continued in fabrication and the controls contractor continued working on coordinating the conduit runs to the smoke purge fans. The plumbing contractor continued to install gutters and leaders at the oculus perimeter. The electrical contractor started the installation of light fixtures at the street level in each bay of the oculus structure. The mechanical contractor set insulation boards in the southeast area of the oculus at elevation 274 in preparation for the installation of the radiant floor heating system. Conduits and junction boxes for heating controls were also set in this area. Also during July, the controls contractor and the CM were coordinating the overall layout of the conduit runs for the radiant heating system.*

East Bathtub Finish Work: During *July*, at elevation 296 along the *west* side of the oculus walkway, the stone contractor continued to install stone flooring. *Stone flooring installation approached 75 percent completion at the elevation 296 walkway around the oculus, except for the stone adjacent to the inside railing.* At the underside of the walkway at elevation 296, installation of the ceiling framing grid system continued during the month. At the east end of the oculus *at* the east grand stairs between elevations 274' and 284' *the contractor constructed temporary walls with handrails that lead up to the interface with the NYCT Dey Street Concourse, along with a temporary fire-rated wall and door system at the concourse entrance. These temporary fire doors are designed to remain open but will automatically close in the event of a fire alarm.*

Primary Distribution Center (PDC) at Tower 1: Migration of PATH Hub project electric loads from the Temporary Primary Distribution Center (TPDC) in the NTA to the PDC in Tower 1 advanced during early June, with the third of six sequential transfers successfully accomplished. Two transfers had been completed previously, one in August of 2014 and the second in December 2014. WTCC projects that the fourth transfer in the series will be accomplished during *early August* 2015.

Vertical Circulation: During *July*, work continued on the installation of escalators and elevators located in both the Transit Hall and the PATH Hall. *The* escalator and elevator units *that* are required to support WTCC's plan to route pedestrian traffic through temporary corridors in the east bathtub, have been inspected, and have undergone 24-hour testing. *Only testing under emergency power remains to be performed for these units.* WTCC forecasts that this route will open during *August*, 2015. *Installation of elevators 16 and 17* at the east end of the oculus, *where* extra steel work *had been required* to address alignment and plumbness issues, advanced *during the month, although both units are still expected* to be completed later than originally planned. The two "scenic" street-level elevators (*elevators 14 and 18)* at the east and west entrances to the oculus are *currently in fabrication.. The material lift at the west side of the Central Fan Plant (ML-2) was completed during July and is ready for testing. Installation of the*

material lift at the east side of the Central Fan Plant is projected to begin in August 2015. The status of elevators and escalators through the end of *July* is summarized in the following table:

Item	In Service Last Month	In Service This Month	Onsite/Under Construction Last Month	Onsite/Under Construction This Month	Not Yet Onsite	Total
Escalators	11	11	31	31	5	47
Elevators	6	6	11	11	4	21

Fire Alarm System: During *July*, work continued at the new PATH Hub project fire command station, which is being built in the back-of-house space at elevation 306' of the Transit Hall. *At street level, the remote street-level fire command station console was set into the weatherproof enclosure cabinet, and wire terminations at that console commenced. This console will work in tandem with the new fire command station and will be accessible to Fire Department of New York (FDNY) personnel and the WTC Fire Safety Director in the event of a fire anywhere within the PATH Hub facility.* Still underway *at the new fire command station* is the installation of the fire alarm system control panels and communications equipment required for it to become fully functional. Until the new fire command station is in service, the existing temporary fire command station housed within the NTA will necessarily remain in service. *Throughout the Early Access Pedestrian Corridor, fire alarm systems were being tested during July in preparation for the opening of this new temporary route. The temporary portion of this route has also been outfitted with a pre-action sprinkler system that was undergoing final testing during the month.*

Commissioning: During *July*, the *interim* commissioning effort *was completed for* the sub-group of three of the eight new emergency diesel generators (Nos. 2, 4, and 7) that were being made ready as part of WTCC's interim plan to place them on-line. *The commissioning entity also initiated an effort during the month to return to areas of the PATH Hub project that previously had received TPTOs in order to review the status of the work and determine whether open Critical Issues Reports (CIR's), that it had issued at the time of the TPTOs, could be closed based on the advancement of the work in the intervening period. Areas to be reviewed include the South Mezzanine, East-West Connector, Platform A and Platform B. In addition, the commissioning entity intends to resume the testing and commissioning of any elements of work in those areas that have been completed since the TPTOs were issued.*

Communications Systems: *During July additional spot coolers provided marginal relief from previously reported heat build-up in critical communications rooms. Testing of the signage system and network redundancy also continued during July, however the results identified some configuration issues that require resolution so that further network redundancy function tests can proceed. The installation of back-of-house telephones also proceeded but at a relatively slow pace. Customer Information System factory acceptance testing was performed during the month, but the results were not accepted. The contractors and WTCC will be reviewing the issues raised by the testing in the coming period to determine next steps. SCADA system factory acceptance testing is also pending at the manufacturer's facility. Plans to witness that testing were being developed during the month. At the North Projection, a fiber optic cable run to PL-109 is*

needed in order to provide fiber-based hub connectivity and additional radio cable connectivity. This topic is expected to be the subject of review going forward.

Central Fan Plant: During July, *some progress was observed at* the location where the *fresh air* supply fans will be installed, which is on the fourth floor of the Tower 3 podium. However, the three fans *remained* staged adjacent to the shaft and not yet set in position. *The fresh air shaft that will feed fresh air to the Central Fan Plant still contains a work scaffold system and openings in the shaft walls at locations where the emergency diesel fuel riser piping has been undergoing repair and re-testing. At the end of the month, chilled water delivery to the Central Fan Plant from the Central Chiller Plant commenced via temporary supply and return piping running through the Platform B, C, and D areas. Initial downstream distribution of the chilled water to the South Mezzanine occurred in the final days of the month, and steps to start using some of the fan plant's air-handling units to distribute cooled air to various spaces on an interim basis were also being taken, with implementation expected to start during the first week of August 2015. WTCC also plans to start supplying chilled water to some air conditioning units at equipment rooms where spot coolers have been providing only limited temperature reduction. Also during July, the controls contractor continued installing BATC point-to-point wiring at the Central Fan Plant, and this work was about 75 percent complete at the end of the month. Hydro testing of sprinkler systems in the Central Fan Plant also continued through the month of July.*

Construction Logistics

The WTCC Office of Program Logistics (OPL) continued to facilitate construction progress and the sharing of access, egress, and work zones among all contractors onsite. *During July, pedestrian traffic flow between Liberty Street and Vesey Street along Greenwich Street was enhanced when the hours of operation of this pedestrian passageway were expanded to 6 a.m. to 8 p.m. On July 10, a tickertape parade was held in lower Manhattan for the U.S. Women's World Cup Championship Soccer Team, requiring the temporary cessation of site construction deliveries. On September 25, Pope Francis is scheduled to visit the WTC site during his trip to the United States. Although yet to be defined, impacts on project construction are expected. In both instances, the OPL advises project participants in advance regarding the imposition of limits on the performance of project work, as well as restrictions on entry to areas within the site during those events.*

Interagency Coordination

OPL continued to coordinate site construction and logistics among the many project stakeholders, including contractors, construction managers, tenants, insurance firms, PATH operations, and the Port Authority Police Department (PAPD). Monthly meetings continue to be held among the various entities. June activity included the coordination with New York State Department of Transportation (NYSDOT) regarding its removal of the temporary portion of the Liberty Street pedestrian bridge across West Street. A laydown area for setting and dis-assembly of bridge sections was made available to NYSDOT's contractor during June for this activity. *During July, demolition and disposal of the footings from the removed temporary portion of the Liberty Street Bridge continued.*

Community Relations

OPL continued to distribute construction alerts, updates, and monthly construction progress newsletters to the community and stakeholders. During February, OPL published a delivery requirements memorandum detailing the procedure for deliveries to the WTC, including security requirements. Updates on the project are also listed at the website wtcprogress.com, and specific presentations are periodically made to Manhattan's Community Board #1.

C. Schedule

(b) (4) (b) (4) WTCC achieved the "Platform B Operational" milestone event on May 7, 2015, which represents an approximate five-month delay from WTCC's original projection. (b) (4) WTCC is expected to release IMS *81* (with a data date of *August* 1, 2015) at the beginning of *September* 2015. In April 2015, WTCC submitted Recovery Plan 03, which addressed project impacts and mitigation actions related to the delay in completion of the RRCA milestones of "Transit Hall Superstructure Complete (Glazing)" by January 13, 2015, and "Mezzanine Structural Steel at Platform C Substantially Complete" by June 30, 2015. WTCC is now targeting completion of the oculus glazing by August 31, 2015, and mezzanine structural steel at Platform C by October 31, 2015.

The following table summarizes the 90-day look-ahead for significant activities:

Significant Activity	**Action by**
Utility Tunnel Complete at Platform C	WTCC
Central Fan Plant Online	WTCC
Migrate PATH Hub Electrical Loads from the TPDC at the NTA to the PDC at Tower 1	WTCC
Demobilization of Oculus Steel Contractor	WTCC
Start of Oculus Skylight Commissioning and Testing	*WTCC*

The PMOC, independent of the grantee's schedule forecasts, has developed selected schedule tools to forecast upcoming critical schedule milestones. The results of that effort identified the following forecast dates for three milestone events:

Schedule Tool Topic	PMOC Forecast
(b) (4)	

D. Cost Data

(b) (4)

(b) (4)

reflects the updated engineer's estimates for all packages in the completed procurement plan, and includes the PATH Hub project's share of the common infrastructure projects, such as Retail, the Central Chiller Plant, the Common Electrical System, and site-wide operational support elements. WTCC continues to update the cost allocations that are assigned to the PATH Hub project.

The following table summarizes the latest available EAC (WTCC's forecast) and expenditures as of *June 30, 2015*:

Description	EAC (WTCC's Forecast) (in millions)	Expenditures (in millions)
Construction	*$2,811*	*$2,461*
Program Management and Design	709	*687*
	(b) (4)	

WTCC submitted its monthly cost model revision on *July 31, 2015*. It shows that WTCC's EAC for the federally funded PATH Hub project is (b) (4), which is unchanged from the cost model revision submitted at the end of the prior month. (b) (4)

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Over the last 12 months (*July 2014 to June 2015*), the average project expenditure per month has been approximately *$22 million*. That monthly expenditure is below the monthly burn rate of *approximately $72* million that would be necessary (b) (4) [redacted]

E. Risk Management

To provide an improved project risk tool, the FTA, the Project Management Oversight Contractor (PMOC), and WTCC completed the Project Execution Plan (PEP) in conjunction with the execution of the RRCA on September 18, 2012. That document sets forth a series of project review points with specific project milestones that must be met in order to trigger the release of defined amounts of risk contingency funds to the grantee. As each PEP milestone event is achieved, the PMOC updates the contingency drawdown curves to reflect the evaluation of the project's residual risks and the potential risk retainage release amounts associated with each of the remaining PEP milestones. During May 2015, the PEP milestone defined as "Platform B Operational" was achieved, triggering the initiation of another partial release of risk retainage. As a result, the PMOC issued Spot Report 2146 in mid-June recommending the release of $29 million of risk retainage. In May, the FTA, the PMOC, and WTCC also met in a workshop session to collaborate on identifying and assigning risk retainage release values to the remaining PEP milestones as well as to identify potential additional milestones. That dialogue was continued in mid-June when WTCC provided other project milestones as candidates to be added to the PEP and those suggestions remained under consideration at the end of the month. *During July, the PMOC reviewed the residual risk associated with the remaining work at Platform D and determined that the amount of advance work on that project element warranted consideration of the release of additional risk retainage in the amount of $21 million. The PMOC formally transmitted Spot Report 2146R to the FTA with that recommendation on July 22, 2015.*

As of *July* 2015, the PMOC considers the following issues to be among the top risks to the PATH Hub project:

- Coordination among the oculus curtain wall and skylight contractor and the other contractors working at the Transit Hall space.
- Duration of the rock excavation for utility and ventilation tunnels under the new Platform C.
- Delivery of fresh air to the Central Fan Plant by the supply fans located in the Tower 3 podium.
- *Remaining work to be performed by the controls contractor.*

F. Technical Capacity and Capability Review

The FTA uses the PEP to measure WTCC's technical capacity and capability.

Project Management Plan

An updated draft of WTCC's Operations Management Plan, a PMP sub-plan, was submitted in August 2014, but it was found to lack essential elements. *The grantee submitted an updated*

version of the Operations Management Plan in mid-July. The PMOC is currently reviewing that document and compiling comments.

Project Organization

WTCC continues to update consultant and contractor staff assignments across project areas to address staffing needs as the project advances.

Project Quality Assurance

During *July* 2015, WTCC QA completed *seven* oversight audits that included reviewing the CM QA's field audits and performing its own field construction audit. The *July* audit total reflects the *seven* WTCC QA audit reports that were issued and received at the time this monthly report was drafted. No quality issues were identified for corrective action.

G. Site Safety

The WTC PATH Hub project has established its own safety performance goals for its TCIR and LTIR of less than 5.0 and less than 2.0, respectively. In *June* 2015, the project had three recordable incidents and one lost-time incidents, resulting in a monthly TCIR of *4.92* and an LTIR of *1.64*, based on *121,926*.0 hours worked. As part of its ongoing safety initiatives, WTCC Safety holds weekly safety committee meetings with all site contractor safety managers. During July, WTCC Safety issued several Safety Bulletins and other safety information for use by its site safety managers that addressed the topics of Heat Stress, *an Occupational Safety and Health Administration (OSHA) Fact Sheet on Aerial Lifts, Rigging Safety Practices, Standard Crane Hand Signals,* and *Control of Hazardous Energy-Lock Out/Tag Out (LOTO) Practices and Procedures*. Site safety managers were encouraged to use *these* materials at toolbox talks and to make copies available in their work shanties. *On July 8, 2015, an electrical contractor's crew was assigned to demolish 277-volt temporary lighting in the Transit Hall. The crew's foreman assessed the area and the hazards associated with the task were identified. A pre-task review, including the site-specific LOTO, was conducted with the assigned journeymen. The lighting circuit was locked out and tagged by a journeyman. The lighting fixtures were removed and the circuit wires were cut. When the wires in the junction box were re-spliced, the conductor that had been feeding the removed fixtures was accidentally re-spliced. Believing that they could safely reenergize while continuing to complete the demolition, the LOTO was removed and the circuit was re-energized. A journeyman was still removing conduit and came in contact with the re-energized conductor, receiving an electrical shock. After on-site medical attention, the individual was transported to the hospital for further evaluation and then released. The contractor's remedial action included the following: all supervisors are to place a lock on the hasp, field verify that the circuit is safe to re-energize, and ensure that all employees stay clear of the circuit when it is being re-energized, conductors shall be tested before they are worked on and appropriate Personal Protective Equipment shall be used, (i.e., type 00 gloves and/or leather gloves, when testing circuits of 20amps or less. In addition, WTCC issued a Safety Bulletin on LOTO Practices and Procedures. As a separate issue, in July, FDNY conducted its regularly scheduled bi-weekly site walk-throughs and issued three violations regarding the lack of exit signage in the platform demolition areas, the lack of adequate exit signs at the main floor*

of the Oculus, and the failure to fully remove standpipes that had been taken out of service in the demolition area.

The *July* safety data for the project was not fully available at the time this report was drafted but is expected to be available after mid-*August* 2015.

H. Issues/Problems/Suggestion

During July, difficulty in dissipating heat build-up in various equipment rooms and other PATH Hub project spaces continued. The utilization of temporary spot coolers at those spaces was somewhat effective but not at all of the locations where temporary spot coolers had been deployed. At the end of the month, the first delivery of chilled water from the Central Chiller Plant to the Central Fan Plant occurred via temporary piping through the Platform B, C, and D areas. During August, WTCC plans to distribute that chilled water downstream on an expedited basis, in stages. This expedited distribution of chilled water will be dependent upon the readiness of the downstream cooling systems to be placed into operation and assessments of the need in the spaces they serve.

Coordination of the work both within and immediately outside of the oculus structure continues to challenge WTCC and the CM. They continue to weigh the competing needs for access to work areas and make decisions regarding access based on the relative importance of the involved construction activities.

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End of report. Appendices follow.

APPENDIX A – LIST OF ACRONYMS

BATC	Building Automation and Temperature Control
CA	Construction Agreement
CIR	Critical Issues Report
CM	Construction Manager
EAC	Estimate at Completion
FDNY	Fire Department of New York
FTA	Federal Transit Administration
IMS	Integrated Master Schedule
LMRO	Lower Manhattan Recovery Office
LOTO	Lock Out/Tag Out
LTIR	Lost-Time Incident Rate
MCC	motor control center
MEP	Mechanical, Electrical, and Plumbing
NTA	North Temporary Access
NYCT	New York City Transit
NYSDOT	New York State Department of Transportation
OPL	Office of Program Logistics
PANYNJ	Port Authority of New York and New Jersey
PAPD	Port Authority Police Department
PATH	Port Authority Trans-Hudson
PDC	Primary Distribution Center
PEP	Project Execution Plan
PMOC	Project Management Oversight Contractor
PMP	Project Management Plan
QA	Quality Assurance
QPRM	Quarterly Progress Review Meeting
RCD	Required Completion Date
RFI	Request for Information
RRCA	Revised and Restated Construction Agreement
TCCR	Technical Capacity and Capability Review
TCIR	Total Case Incident Rate
TPDC	Temporary Primary Distribution Center
TPTO	Temporary Permit to Occupy/Use
WTC	World Trade Center
WTCC	World Trade Center Construction