

SPEED TO NEED

HOW THE AIR FORCE BROKE CONTRACTING SPEED RECORDS TO PRODUCE A FUNCTIONAL SOLUTION FOR COVID-19 PATIENT TRANSPORT

A coalition of willing engineers, contracting “ninjas,” and functional experts designed, procured, and tested the “Negatively Pressurized CONEX” isolation and transport prototype in only a matter of weeks—and here’s how they did it.

BY ANNE LAURENT

On April 21, the U.S. Navy announced that 710 sailors from the aircraft carrier USS *Theodore Roosevelt* had tested positive for COVID-19. The ship was in Guam, where sick sailors could be treated at a U.S. Naval Hospital.

However, if the *Roosevelt* had been unable to dock in Guam or another friendly port with medical facilities, hundreds of infected and contagious sailors would have needed air transport off the ship. Currently, however, the largest airworthy isolation pods for transporting contagious patients on military planes carry only four patients at a time.

Anticipating the need to move large numbers of COVID-19-positive patients across the world, in March 2020, Air Force Air Mobility Command asked Air Force Materiel Command to test a State Department

four-person isolation pod – the Portable Bio-Containment Module (PBCM) – for use on a C-17 transport plane. By March 28, the U.S. Transportation Command (USTRANSCOM) had issued an urgent request for a higher-capacity solution and the Air Force put the Agile Combat Support (ACS) Program Executive Office (PEO) in charge.

The Air Force first turned to a mothballed medical transport unit, the Transport Isolation System (TIS). The TIS was developed during the 2014 Ebola out-

► **Capt. Kerollos Marzouk, Test Lead, Air Force CBRN (l); Lt. Col. Paul Hendrickson (m); and Capt. Alexis Todaro (r) pose in front of the NPC prototype at Joint Base Charleston prior to its April 30, 2020, in-flight test aboard a C-17 *Globemaster III*. (Photo courtesy of U.S. Air Force)**







break but never used. “It was fielded and then stored,” said Lt. Col. Paul Hendrickson,¹ materiel leader with the Air Force Chemical, Biological, Radiological and Nuclear (CBRN) Defense Systems Branch, Human Systems Division, at the PEO for Agile Combat Support – part of the Air Force Life Cycle Management Center (AFLCMC) at Aberdeen Proving Ground, Maryland.

Limited Capacity and Availability

A cross-functional team of experts was rapidly deployed to Joint Base Charleston, South Carolina, to refurbish and field the TIS, “but it could only practically fit three to six patients in one C-17 and there were operational limits to its use,” Hendrickson said.²

Neither the TIS nor PBCM had the patient capacity the military sought, and both had more limited availability than the urgent need required. So, to speed a new, bigger containment system into existence, Hendrickson enlisted a team from his branch and across the Joint PEO for CBRN Defense, Air Force Air Mobility Command, AFLCMC, USTRANSCOM, the Defense Threat Reduction Agency, Air Force Operational Test and Evaluation Center Det 2, the 28th Test and Evaluation Squadron, the Air Force Medical Readiness Agency, the Air Force Research Lab, the U.S. Army’s Combat Capabilities Development Command,

and academia.

“Our office had been working along with the 51st Aircraft Maintenance Squadron (AMXS) at Osan Air Base on demonstrating the modification of a standard 40-foot CONEX³ to provide collective protection in a CBRN environment so the 51st AMXS could get its aircraft maintainers rest and relief from their chem-bio gear before going back to the fight,” Hendrickson said. “We were going to demonstrate it at an exercise in Korea. I reached out to my Collective Protection Program Manager Captain [Alexis] Todaro and she sketched out the ‘Negatively Pressurized CONEX.’ Air Mobility Command said, ‘Go and prove it will meet the need.’”⁴

“Like a Clean Room in a Lab”

“The Negatively Pressurized CONEX (NPC) is a 40-foot International Organization for Standardization (ISO) container with HEPA filters and blowers for biocontainment negative pressure,” Hendrickson explained. “Aeromedical professionals can come in and out through an antechamber, like a clean room in a lab.”⁵ Each NPC has room for 28 seats for passengers or 23 seats for ambulatory patients. The seats can be put up to accommodate eight patients on litters. What’s more, the NPC is designed to fit within both C-5 and C-17 aircraft, and to remain functional in flight, to allow the NPC and its occupants to travel over long distances while keeping bio-organisms or other pathogens safely contained within the NPC.

“Any bio-organisms an individual may be infected with remain within that box and will not leak outside,” said Todaro,⁶ Joint Program Manag-

er for CBRN Collective Protection at the Air Force CBRN Defense Systems Branch at Aberdeen Proving Ground, who managed the NPC project. “So now we can transport these patients from a remote area to better medical care without potentially contaminating the air crew, the aircraft, or the caregivers,” she said.⁷

The NPC is also configured to safely carry aeromedical teams. “They can wear their personal protective equipment and also exit the NPC after donning and doffing so they can get the rest and relief they need on these long flights, ensuring the patients get the care they need,” Hendrickson added.⁸

“The Perfect Solution”

Getting a working NPC took overnight work sessions, a coalition of willing functional and technical experts, and the boldness to stretch an unorthodox buying authority to the outer limits of its speed and flexibility potential. “The number of levers we had to move was phenomenal,” said Hendrickson, who led the overall NPC effort.⁹

Hendrickson and Todaro contacted Scott Paris, Joint Project Manager for CBRN Protection, with the NPC idea and he connected them with Joe Novick, product manager for CBRND Protection at JPEO CBRN Defense, in Stafford, Virginia, and Melanie Haynie, a contract acquisition specialist who works closely with Novick at CBRND Protection.

Novick, who became Todaro’s deputy for the NPC project, had handled urgent decontamination requirements in the past and recommended using a prototype other transaction

◀ **Top: A view of the interior of the NPC prototype under construction.**

◀ **Bottom: Capt. Todaro (l); Chip Warder, lead engineer on the NPC project (m); and Joe Novick (r) pose in front of the NPC prototype. (Photo courtesy of U.S. Air Force)**

(OT) agreement through the Countering Weapons of Mass Destruction (CWMD) consortium. CWMD was established by the Joint Program Executive Office for Chemical and Biological Defense and is managed by Advanced Technology International – the largest consortium manager serving the U.S. government.

OTs are performed under the authority granted by 10 U.S.C. 2371b, and are generally exempt from federal procurement laws and regulations. They also offer flexibility to shape agreements in many ways, including joint ventures, partnerships, consortia, and multiagency deals with multiple providers.¹⁰

“We were trying to rapidly prove a concept to meet urgent needs and [an OT agreement] seemed like the perfect solution,” Novick said.¹¹ “Because it is prototyping based, you don’t have to go through the very stringent rules in the *Federal Acquisition Regulation*. We’re able to make decisions during tests to get what the user wants.”¹²

OTs require less paperwork than typical source selections, usually an eight-to-10-page white paper versus a voluminous response to a request for proposals. OTs also offer flexibility for open communication between vendors and the government to answer questions after the call for white papers is released, and between the awardee, the buyers, and the consortium as the prototype is being built.

Novick appreciated having the CWMD consortium – “people who deal with chem-bio defense”¹³ – managing the prototyping of a bio-contaminant isolation chamber. CWMD develops solutions to weapons of mass destruction–related problems,

OTs can only be used for prototypes if one of the following applies:

- ▶ At least one nontraditional defense contractor is significantly participating in the project,
- ▶ All significant participants are small businesses or nontraditional defense contractors,
- ▶ At least one-third of the total cost of the prototype project is provided by nongovernment participants, or
- ▶ The senior procurement acquisition official provides in writing an explanation of the exceptional circumstances justifying an OT.

Follow-on production can only be conducted when both of the following apply:

- ▶ The underlying prototype OT was competitively awarded, and
- ▶ The prototype project was successfully completed.

Source: Congressional Research Service Report #R45521.

including biological weapon defense.

Novick also noted the flexibility of using an OT “when you don’t have very hard, high-level requirements – the NPC was a bunch of smart people figuring out the requirements on a weekend.”¹⁴

“We Still Made It Work”

“We put together the requirements in a single weekend over telecons, with the assistance of top engineering minds in CBRN defense, the Human Systems office, C-17 office, and aeromedical user representatives,” Hendrickson said.¹⁵ “On a Saturday, the team spent hours on a telecon with 30 engineers, aeromedical experts from Air Mobility Command, and other experts from across the United States, followed by additional telecons over the weekend.”¹⁶

CWMD issued a draft request for white papers on March 30, after phone meetings with vendors. The final request was released March 31 with responses due April 2. The OT was awarded in seven days.

Hendrickson credits Haynie, who had previously worked with CWMD, for being the “contracting ninja”¹⁷ on the project with the experience to make the OT wheels turn. “The OT selection team spent three days nonstop vetting each white paper and in negotiations,” Hendrickson recalled.¹⁸ “As they were doing that, we were finding the funding and getting it [approved] so it could be put on a purchase request.”¹⁹

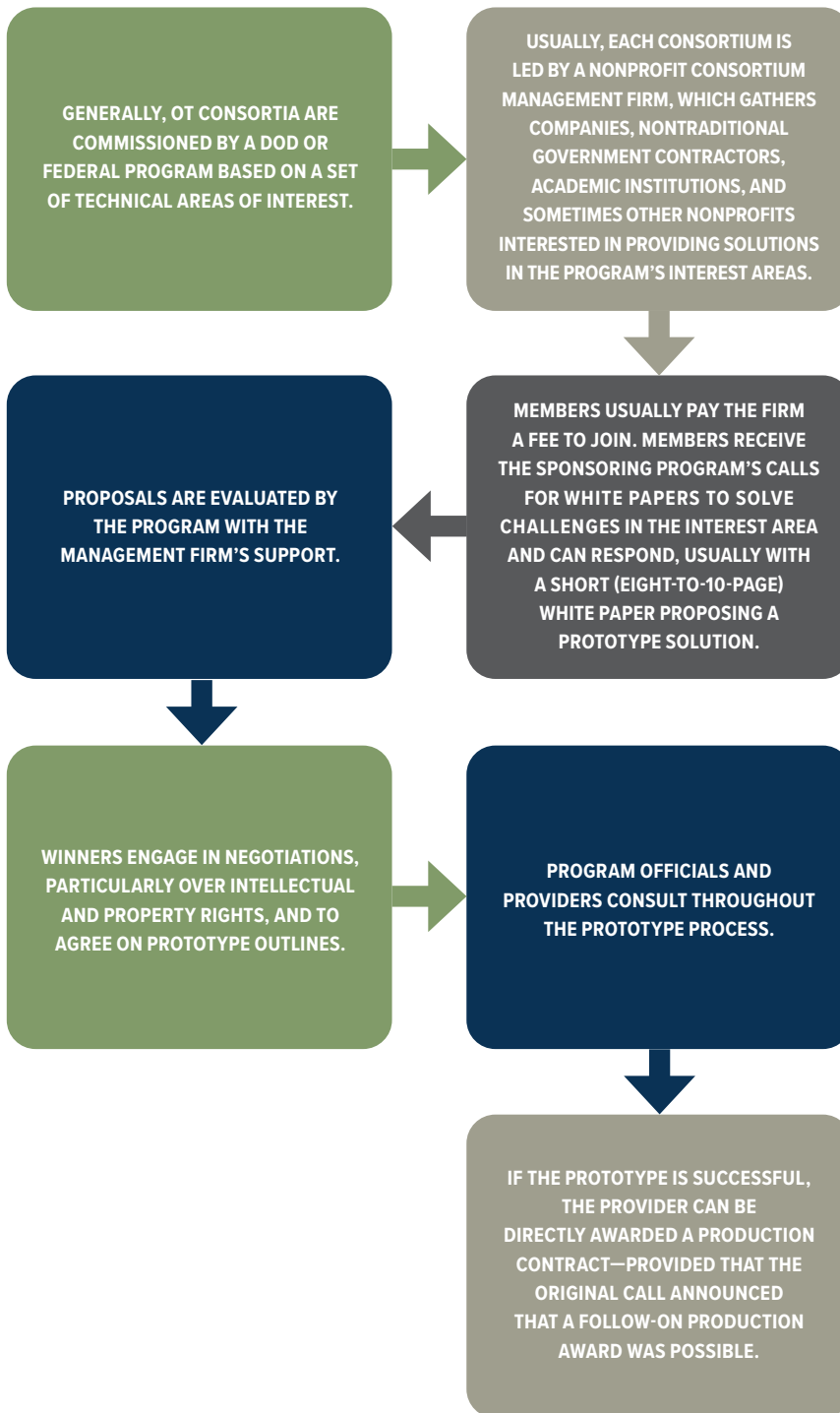
However, the NPC project also had to contend with other issues caused by the COVID-19 pandemic. “Contracting, budgeting, finance offices, source selection, and subject matter experts

▶ **Top: An exterior view of the fully assembled NPC prototype aboard a C-17. (Photo courtesy of U.S. Air Force)**

▶ **Bottom: U.S. Airmen converse inside the NPC during the April 30, 2020, in-flight test. (U.S. Air Force photo by Staff Sgt. Chris Drzazgowski)**



Working with an OT Consortium, Simplified



worked extra hours with the challenges of telecommuting,” said Hendrickson.²⁰ “While our dedicated contractors worked around the clock to build the system, communications were degraded [and] e-mail went down.”²¹ Despite this, Hendrickson said, “we still made it work.”²²

“Increase in the Demand Signal”

“[An OT] is a great way to get a capability quickly, but you’ve got to have a Capt. Todaro, a Joe, and a Melanie. If not, we would’ve burned,” Hendrickson said.²³ “You need a coalition of the willing, and we had one – a team of experts to provide actionable information, engineers to lay out the risks and constraints, and a willing industrial base. If any of those had not been there, we’d be having a different conversation.

“One critical reason this was even possible in the time we had is that the team we needed already had been assembled at Joint Base Charleston to operationalize the TIS and test the PBCM. Having them together and willing – members of Air Mobility Command’s Aeromedical Evacuation team and Surgeon General Office, as well as the test community and experts in biological and infectious disease containment – really set this up for success.”²⁴

It took only 14 days from agreement on the design for the contractor team comprised of UTS Systems, HEI Inc., and Delta Flight Products to produce the proof of concept NPC prototype. “With more time, we could have produced a fielding ready unit,” Hendrickson said, “but our goal was to prove one could be built, so that’s

what we did.”²⁵

Following the successful proof of concept for the NPC and at the recommendation of PEO ACS, on April 30, 2020, the Commander of Air Mobility Command agreed to proceed with the rapid acquisition of the NPC as well as a smaller variant, the “NPC Lite,” for intra-theater transport on C-130 aircraft. These systems are also being developed as prototypes under the same OT – with the goal being to have operational prototype units begin transporting passengers and patients within a month.

The Air Force has flown multiple missions using the TIS to transport COVID-19 patients and has certified the PCBM for flight on the C-17. However, the need for the bigger NPC has not abated as infections continue to rise within the military services.

“USTRANSCOM is still expecting a significant increase in the demand signal,” Hendrickson said, “and our team is primed to deliver.”²⁶ **CM**

Anne Laurent

► Director, Professional Practice and Innovation, NCMA.

The opinions expressed by those interviewed for this article are solely their own and do not reflect the official positions of the U.S. federal government.

ENDNOTES

1 Editor’s Note: All quoted material in this article is taken from personal interviews conducted on May 6, 2020, by the author and each of the individuals quoted (Lt. Col. Paul Hendrickson, Materiel Leader, Air Force CBRN Defense Systems Branch, Human Systems Division, Air Force PEO for Agile Combat Support, AFLCMC, Aberdeen Proving Ground, Maryland; Capt.

Alexis Todaro, Joint Program Manager, CBRN Collective Protection, Air Force CBRN Defense Systems Branch, Aberdeen Proving Ground, Maryland; Joseph Novick, Product Manager, CBRND Protection, JPEO CBRN Defense, Stafford, Virginia; and Melanie Haynie, Acquisition Specialist SME I, CBRND Protection, JPEO CBRN Defense, Stafford, Virginia).

2 Hendrickson, *ibid.*

3 Editor’s Note: A “CONEX” (short for “container express”) is a large rectangular container typically used for storage and transportation – e.g., a standard cargo shipping container is a type of CONEX.

4 Hendrickson, *see note 1.*

5 *Ibid.*

6 Todaro, *see note 1.*

7 *Ibid.*

8 Hendrickson, *see note 1.*

9 *Ibid.*

10 *See, generally,* Moshe Schwartz and Heidi M. Peters, “Department of Defense Use of Other Transaction Authority: Background, Analysis, and Issues for Congress,” Congressional Research Service Report # R45521 (Washington, DC: Congressional Research Service, February 22, 2019), *available at* <https://fas.org/sgp/crs/natsec/R45521.pdf>.

11 Novick, *see note 1.*

12 *Ibid.*

13 *Ibid.*

14 *Ibid.*

15 Hendrickson, *see note 1.*

16 *Ibid.*

17 Editor’s Note: A “contracting ninja” is a term coined by Maj. Gen. Cameron G. Holt, Deputy Assistant Secretary for Contracting, Office of the Assistant Secretary of the Air Force (Acquisition, Technology, and Logistics), to refer to an individual’s ability to work both within and around (as allowable) the established federal acquisition system to accomplish the mission.

18 Hendrickson, *see note 1.*

19 *Ibid.*

20 *Ibid.*

21 *Ibid.*

22 *Ibid.*

23 *Ibid.*

24 *Ibid.*

25 *Ibid.*

26 *Ibid.*



CGI’s Momentum[®] is driving the business of government

- » Exclusively developed for federal organizations, rather than layering functionality on top of commercial software
- » Integrated solution supporting the full federal financial, budget, asset and procurement management lifecycles
- » Trusted by over 190 federal organizations, agencies and federally funded non-profits
- » Designed to meet the needs of civilian, defense and intelligence agencies for planning and modernizing contracting operations

Learn more:
www.cgi.com/momentum



POST ABOUT this article on NCMA Collaborate at <http://collaborate.ncmahq.org>.