

February 16, 2024

Michael Walker, CEO  
STAX Engineering, Inc.  
65 Pine Avenue, Suite 943  
Long Beach, California 90802  
[m.walker@staxengineering.com](mailto:m.walker@staxengineering.com)

Dear Michael Walker:

California Air Resources Board (CARB) staff have reviewed the amended Test Plan B for the two barge-based STAXbox.A-1 systems (XCRAFT-1 + XBOX1-2; XCRAFT-2 + XBOX2-1) to treat emissions from container vessel auxiliary engines.

### **STAX Test Plan Submission History**

On October 31, 2023, STAX Engineering, Inc. (STAX) submitted "Research Test Plan to Expand Containership CAECS and Test XCap Connector" (Expanded Test Plan) to CARB while Executive Order (EO) approval for the STAXbox.A-1 system, under STAX's original test plan for container vessels, was still pending. The STAXbox.A-1 was granted EO G-23-294 on December 4, 2023.

CARB staff reviewed the Expanded Test Plan and provided comments to STAX on December 15, 2023. At CARB staff's suggestion, STAX subdivided the testing identified in the Expanded Test Plan into Test Plans A and B.

- Test Plan A was approved separately in a letter to STAX dated January 12, 2024, and includes testing for the purposes of expanding the operating conditions for the STAXbox.A-1 system and evaluating the XCAP connector. Upon successful completion of the testing and performance demonstration described in Test Plan A, EO G-23-294 will be amended to include the expanded operating conditions and the XCAP connector.
- STAX submitted Test Plan B on December 23, 2023, which includes testing for the purposes of demonstrating equivalency of two additional STAXbox.A-1 purification trains (XBOX1-2 and XBOX2-1) to the train approved under Test Plan A so the two additional trains can be used for compliance with the 2020 At Berth Regulation.

CARB staff reviewed Test Plan B and provided comments to STAX on January 19, 2024. To address CARB staff's comments, STAX revised and resubmitted Test Plan B on January 21, 2024 (though this document is dated January 22, 2024). CARB staff met with STAX on February 8, 2024 to discuss Test Plan B and the process for approving duplicate systems, and provided comments following the meeting. To address CARB staff's comments, STAX revised and resubmitted Test Plan B on February 8, 2024 (though this document is dated February 9, 2024).

## **Stipulations for CARB Approval of Test Plan B**

Based on CARB staff's review, and pursuant to Health and Safety Code section 93130.5(f) of the 2020 At Berth Regulation, STAX's Test Plan B (submitted February 8, 2024, attached) is hereby approved in accordance with testing requirements under the 2020 At Berth Regulation and the CARB Recommended Emissions Testing Guidelines for Ocean-Going Vessels. To complete the testing outlined in Test Plan B (submitted February 8, 2024), a total of 20 vessel visits (10 visits per train) are approved to utilize the research exception to compliance with the 2020 At Berth Regulation set forth in section 93130.8(d) or 93130.10(e).

The two additional trains (XBOX1-2 and XBOX2-1) are duplicates of the modified XBOX1-1 train approved under Test Plan A. Since there are modifications to the XBOX1-1 train that are pending approval under Test Plan A, the testing described in Test Plan A must be completed by STAX and reviewed and approved by CARB before STAX's two additional trains (XBOX1-2 and XBOX2-1) can be granted Executive Order approval for compliance with the 2020 At Berth Regulation.

CARB approval is based on the system description, design, and operational procedures outlined in STAX's Test Plan B (submitted February 8, 2024). No changes or modifications are permitted to the STAXBox.A-1 system, including the capture system design and operation, without prior CARB approval. CARB approval for the STAXBox.A-1 system remains limited to containership auxiliary engines and one engine/exhaust stream only. Although the XCRAFT-1 barge is equipped with XBOX1-1 and XBOX1-2, STAX is only approved to operate one XBOX at a time. No simultaneous control of two auxiliary engines shall be performed. STAX will need to complete all testing outlined in their Test Plan B (submitted February 8, 2024) and provide all reports generated from these tests.

The application requirements that STAX must meet to submit test results are outlined in section 93130.5 of the 2020 At Berth Regulation. Per section 93130.5(i) of the 2020 At Berth Regulation, if testing deviates from the approved Test Plan without prior CARB approval, the Executive Officer may deem the application incomplete or disapprove the application. An example of deviating from the Test Plan includes conducting testing on additional vessel visits beyond those approved in the Test Plan and claiming such visits qualify for the research exception set forth in section 93130.8(d) or 93130.10(e) of the 2020 At Berth Regulation. CARB reserves the right to request the results of any testing conducted beyond the testing described in the approved Test Plan.

Vessel visits that coincide with the tests specified in the approved test plan may count as a compliant visit under the research exceptions in section 93130.8(d) or 93130.10(e) of the 2020 At Berth Regulation; however, these sections only apply for testing identified in Test Plan B (submitted February 8, 2024) and conducted after the date of this letter when Test Plan B was approved. All testing must adhere to the system description, design, and operational procedures outlined in the approved Test Plan B.

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STAX is responsible for tracking the usage of the 20 approved vessel visits that may utilize the research exception, and STAX must provide a copy of the approved Test Plan B to each vessel participating in the research. STAX is also responsible for communicating with the vessel operator to ensure the operator knows what tests are being performed during the visit, and which number out of the 20 approved visits the vessel is participating in. As noted above, any tests completed in excess of those approved in the Test Plan B would not be eligible for the research exception to compliance with the 2020 At Berth Regulation set forth in section 93130.8(d) or 93130.10(e). If more than 20 vessel visits are needed to complete all the testing outlined in the approved Test Plan, STAX must seek additional approval from CARB.

If you have any questions, please contact Angela Csondes, Manager, Marine Strategies Section, at [angela.csondes@arb.ca.gov](mailto:angela.csondes@arb.ca.gov).

Sincerely,

A handwritten signature in blue ink, appearing to read "Bonnie Soriano".

Bonnie Soriano, Chief, Freight Activity Branch, Transportation and Toxics Division

Attachment: [STAX CARB Expanded EO XCAP research test plan new systems .003.docx]

cc: Angela Csondes, Section Manager, Marine Strategies Section