Some of the Submarine Transducers Developed and Manufactured by Massa

- TR-317 Transducer (2000’s - Present)
- DT-574 Hydrophone (2000’s - Present)
- TR-353 Transducer (2000’s - Present)
- EC-20 Array (2000’s - Present)
- High Frequency Chin Array (HFCA) Projector and Hydrophone Arrays (2000’s - Present)
- TR-242B/BQS-15 (1990’s)
- TR-316/BQS-8,14 (1990’s)
  - Under ice navigation sonar
- DT-276A/BQR-7 (1970’s - Present)
- BQG-2 & BQG-4 Line Hydrophones for PUFFS (1970’s)
  - Most precise production Hydrophone ever mass produced
A Number of Transducers Manufactured by Massa are Used in Different Sonar Systems on U.S. Navy Submarines

- Many of these transducer designs have enhanced performance and lowered system costs
High Frequency Chin Array Projectors and Receivers

- Massa developed the Projector Array for the anti-mine

- Massa delivered the first three production HFCA Projectors and Cable Assemblies in 2002 and has so far delivered Projectors for the first 18 shipsets under subcontract to Lockheed Martin

- Massa has supplied the Receiving Hydrophone Arrays for shipsets 11-18 under subcontract to Lockheed Martin

- Massa has twice received the prestigious Star Supplier Award from Lockheed Martin for its work on the Chin Program
  - Only 121 suppliers were recognized from a total of over 10,000 approved companies in Lockheed’s strategic supplier base
Massa BQG-2 & BQG-4
Line Hydrophones for Puffs

• Most precise production hydrophone ever mass produced
  – Acoustic center of 6 ft. line was held to within .010 inches from the face of mounting flange
  – The First Article Test Report stated that the uniformity of the Massa production units was greater than the precision of measurement of the Navy test equipment

• Massa delivered on 12 separate production contracts
  – All other manufacturers took exception to the performance specifications
Some of the Sonars Developed and Manufactured by Massa for Use With Torpedoes and Torpedo Tube Launched Systems

- **MK-30 MOD 2 Towed Array (2000’s - Present)**
  - Massa was the first contractor to be First Article Approved

- **MK-30 MOD 1 Towed Array (1990’s - Present)**
  - Massa redesigned the system to improve performance
  - Massa is the only contractor First Article Approved
  - Massa manufactured 7,000 units at a third of the Government’s estimated cost

- **MK-84 Pinger (1990’s)**
  - Massa redesigned the system to meet shock requirements

- **CACHE (1970’s)**
  - The sea unit is launched from a torpedo tube
  - The command unit is diver operated

- **Deep Ocean Transponder (1970’s)**
  - Acoustic Navigation Systems
  - Launched from torpedo tubes

- **MK-44 Acoustic Torpedo (1965-1975)**
MK-30 Towed Array

- Array towed by torpedo-like fish
- System simulates a submarine for homing torpedoes by receiving sonar pulse and replying with appropriate echo
- Massa redesigned the receiver to improve uniformity, reliability, and to produce a flat response over the required frequency band

MK-84 Pinger

- Attached to torpedoes for tracking on test ranges
- Massa redesigned the system to meet the shock requirements
MK-44 Acoustic Torpedo

- Acoustic nose cone was subcontracted to Massa for a third of the Government’s cost

- Massa manufactured over 7,000 assemblies
  - Massa developed special production procedures to match magnetostrictive stacks to produce the proper acoustic beam
CACHE Beachhead Supply Delivery System

- Developed by Massa under Government contract
- Sea Unit individually coded
  - Filled with supplies
  - Launched from submarine
- Command Unit
  - Omnidirectional transmitter
  - Directional receiver
  - Acoustically activated
  - Guides operator to acoustic pulses from the Sea Unit that has risen in depth and snubbed anchor line