ASX ANNOUNCEMENT

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CFOAM, LLC RECEIVES INAUGURAL CFOAM® CARBON FOAM ORDER FOR UNITED STATES NAVY EXHAUST UPTAKE PROGRAMME

Triadelphia, WV, USA: CFOAM Ltd (**CFO** or **the Company**), via its wholly owned subsidiary CFOAM, LLC, is pleased to report that it has received the first order from Touchstone Research Laboratory (**Touchstone**) for the supply of CFOAM® Carbon Foam panels that will be used in the construction of an exhaust uptake system to be installed in a United States Navy (**USN**) Arleigh Burke Class (Aegis) Destroyer at the beginning of 2019.

This new, proprietary uptake system, for which CFOAM® Carbon Foam is a critical component, has been developed by Touchstone over a 10+ year partnership with the USN. During that period, Touchstone's proprietary system has successfully met, and exceeded, multiple stringent test requirements - and has emerged as the technology to be considered as a potential permanent fleet-wide replacement for the incumbent metallic exhaust systems.

Metallic structures have been the mainstay for these exhaust systems, and the specific metal used is typically steel, aluminium, stainless steel, Inconel®, or even titanium - depending on the equipment and the desired level of performance. Due to the combination of high temperature and salt water conditions, metallic exhaust systems are plagued by corrosion and require extensive maintenance and repair. The new exhaust system being developed by Touchstone and its partners is based on CFOAM® Carbon Foam. CFOAM® material adds corrosion resistance, structural capability, thermal isolation, and acoustic dampening to the system with significant weight advantages.

Overall, Touchstone's system utilizing CFOAM® panels provides very significant benefits to the overall cost, maintenance and operational performance of the ships, including:

- *Materially lower construction materials costs;*
- *Substantial improvements in corrosion resistance, resulting in far lower direct maintenance and more sea time;*

- *Easier and lower-cost general maintenance due to the modular system structure employed;*
- *Markedly lower total vessel weight, thus enabling superior combat manoeuvrability and ability to carry a greater armament complement;*
- *Further potential benefits such as increased sound absorption/lower acoustic resonance, vibration and lower fuel costs.*

In April, the USN decided to keep every one of its Arleigh Burke-class destroyers in service for 45 years, extending the life of the entire class. The Deputy Chief of Naval Operations for Warfare Systems, Vice Admiral Bill Merz, said that the move would allow the Navy to reach a 355-ship fleet by 2036 or 2037. Keeping each hull in the fleet for a 45-year service life equates to an extension of 5-10 years for each vessel.[1] Successful sea-trials of Touchstone's CFOAM® Carbon Foam-based exhaust uptake system would be a contributor to the lengthening of this service life.

The direct addressable market for CFOAM® products related to this application potentially amounts to millions of cubic feet. In the Arleigh Burke-class fleet alone, there are currently 65 ships in commission with a further 12 under construction or slated for construction (and an additional 3 Zumwalt-class destroyers), with each vessel requiring approximately 3,000cft of CFOAM® Carbon Foam to facilitate a complete uptake exhaust replacement/installation. As Figure 1, below, indicates, the Arleigh Burke-class fleet, although the largest single class in the U.S. Navy, is still less than 25% of the current total U.S. Navy Fleet (note: the graphic reflects 2016, and several Arleigh Burke destroyers, notably, DDG113 (John Finn), DDG-114 (Ralph Johnson) and DDG-115 (Rafael Peralta) have since been commissioned, bringing the total to 65).

The significance of this development reaches beyond the Arleigh Burke-class Destroyer for the USN, as the addressable market also includes the potential for US allies' naval fleets to incorporate Touchstone's CFOAM® Carbon Foam-based technology into their respective fleets. Additionally, successful sea-trials would further validate CFOAM® products technology and enable the Company to actively exploit the global maritime commercial/merchant fleet at both a private and government level.

To add context to this program, the most recently commissioned Arleigh Burke vessels, DDG-113 to DDG-115, that were awarded in mid-2011, came with an average cost of ~US$1.8427bn per vessel[2]. A successful deployment of CFOAM® Carbon Foam across an entire vessel's exhaust-uptake system alone (i.e. 3,000cft) would result in a cost of circa-US$1mn, or only 0.05% (5bps), of the total vessel cost. This is, naturally, a gross outlay, with no accountability of potential savings associated with a reduction in general maintenance and repair costs[3].

The construction of this first full-scale exhaust uptake system by Touchstone will take place during the remainder of the year and is scheduled for installation on a designated vessel that will be "on port" in early-2019. This installation will be followed by final sea-trials during 2019, the purpose of which will be to validate the use of the CFOAM® materials-based system in "real-world" sea-trial conditions to formalize and approve its use in all future ship retrofits, and new vessel construction. The Company anticipates that additional, and ongoing, orders of CFOAM® products will then start ramping–up materially in the later part of 2019. This timing is planned to coincide with the Company's 70,000 cft/year capacity Phase 2 expansion program commissioning (the full scoping, engineering, financing etc enabling a full commitment to this Phase 2 investment is expected to be completed around the end of Q3 this year).

Executive Director and CEO, Alain Bouruet-Aubertot commented: *"While we had little doubt about this program becoming a source of demand for CFOAM® Carbon Foam eventually, we are very pleased to have now received this first CFOAM® products order from* Touchstone *as it pertains to an important application that will become a key contributor to our upcoming Phase 2 expansion program. Although this purchase order came through later than we had initially anticipated, the long-standing commercial opportunity-set remains the same in terms of market potential and timing of development.*

This announcement also underscores the synergistic benefits of the close working relationship between Touchstone *and CFO. Because of its knowledge of the properties and performance of CFOAM® products,* Touchstone *has the capability to develop new proprietary systems that, in turn, become important sources of demonstrable demand for CFOAM® products."*

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Additional Information

Given the sensitive nature of private contractor associations with key Government departments, additional information will likely need to be vetted and approved by all stakeholders. With this in mind, the Company wishes to highlight the latest presentation from the DDG 51 Program Manager to the Surface Navy Association, which provides key production status information relating to the Huntington Ingalls and General Dynamics – Bath Iron Works DDG-51 programs:
http://www.navsea.navy.mil/Portals/103/Documents/Exhibits/SNA2018/DDG51-Moton.pdf?ver=2018-01-10-160948-697

About the Arleigh Burke Class (DDG 51) Destroyer

- The *Arleigh Burke* class employs all-steel construction and comprises four separate variants or "Flights." DDG 51-71 represent the original design and are designated as Flight I ships; DDG 72-78 are Flight II ships; DDGs 79-115 are Flight IIA ships in service and will continue through DDGs 124 and 127; The Flight III baseline will begin with DDGs 125-126, and continue with DDGs 128 and follow.
- Sixty-five DDG 51 class ships have been delivered to the fleet (DDG 51-115). An additional twelve ships are under contract with shipbuilders HII or BIW. Of these twelve ships, eight are currently under construction.
- *A DDG modernization program is underway to provide a comprehensive mid-life upgrade that will ensure the DDG 51 class will maintain mission relevance and remain an integral part of the Navy's Sea Power 21 Plan*
- For further information, please go to:
  http://www.navy.mil/navydata/fact_display.asp?cid=4200&tid=900&ct=4

[1]https://news.usni.org/2018/04/12/navy-will-extend-ddgs-45-year-service-life-no-destroyer-left-behind-officials-say

[2] *O'Rourke, Ronald (19 April 2011).* "Navy DDG-51 and DDG-1000 Destroyer Programs: Background and Issues for Congress". *Congressional Research Service*. Retrieved 23 October 2011. Since 1 and 2 ships are procured in alternate years and the "1 in a year" ships cost more, the fairest estimate of unit price comes from averaging three ships across two years. US$50-300m is spent on long lead-time items in the year before the main procurement of each ship. DDG-114 and DDG-115 together cost US$577.2m (FY2010) + US$2,922.2m (FY2011)= US$3,499.4m,(p25) and DDG-116 cost US$48m (FY2011) + US$1,980.7m (FY2012)= US$2,028.7m,(p12) making an average for the three ships of US$1,847.2m. DDG-113 cost US$2,234.4m.(p6)

[3] Illustrative purposes only. This is not a sales forecast and there is no certainty that sea trials will be successful.

Figure1:

U.S.Navy Active Ship Force Levels, 2011 to 2016

	9/30/11	9/30/12	9/30/13	9/30/14	9/30/15	9/30/16
Combatant (Warship)	**221**	**222**	**217**	**222**	**201**	**204**
Aircraft Carrier (CVN)	11	11	10	10	10	10
Cruiser (CG)	22	22	22	22	22	22
Destroyer (DDG)	61	62	62	62	62	62
Destroyer (DDG 1000)	-	-	-	-	-	1
Frigate (FFG)	26	23	17	10	-	-
Littoral (LCS)	2	3	4	4	5	8
Patrol Coastal (PC)	-	-	-	10^	-	-
Attack Submarine (SSN)	53	54	54	55	54	52
Ballistic Missile Submarine (SSBN)	14	14	14	14	14	14
Guided Missile Submarine (SSGN)	4	4	4	4	4	4
Amphibious Assault Ship [General] (LHA)	1	1	1	2	1	1
Amphibious Transport Dock (LHD)	8	8	8	8	8	8
Amphibious Assault Ship [Multi] (LPD)	7	8	9	9	9	10
Landing Dock Ship (LSD)	12	12	12	12	12	12
Combatant (Other)	**63**	**65**	**68**	**67**	**70**	**71**
Mine Countermeasures Ship (MCM)	14	14	13	8	11	11
Ammunition Ship (T-AE)	1	1	1	-	-	0
Fleet Replenishment Oiler (T-AO)	15	15	15	15	15	15
Fast Combat Support Ship (T-AOE)	4	4	4	3	3	2
Dry Cargo & Ammunition Ship (T-AKE)	11	11	12	12	12	12
Command Ship (LCC)	2	2	2	2	2	2
Submarine Tender (AS)	2	2	2	2	2	2
*Joint High Speed Vessel (JHSV) Expeditionary Fast Transport (T-EPF)	-	-	2	4	5	7
Surveillance Ship (T-AGOS)	5	5	5	5	5	5
Salvage Ship (T-ARS)	4	4	4	4	4	4
Fleet Ocean Tug (T-ATF)	4	4	4	4	4	4
(MPS T-AKE)	1	2	2	2	2	2
Afloat Forward Staging Base (AFSB)	-	1	1	1	1	1
*Afloat Forward Staging Base/ Expeditionary Sea Base (T-ESB)	-	-	-	-	-	1
*Mobile Landing Platform (MLP) Expeditionary Transfer Dock (T-ESD)	-	-	1	2	3	2
Hospital Ship (T-AH)	-	-	-	2	-	-
High Speed Transport (T-HST)	-	-	-	1	1	1
TOTAL BATTLE FORCE LEVEL	**284**	**287**	**285**	**289**	**271**	**275**

^ Patrol Coastal (PC) were counted in the battle force level only for FY 2014.

*JHSV and MLP classifications changed to T-EPF and T-ESD in August 2015. Additionally, the classification T-ESB was created for AFSBs used for expeditionary support.

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Source: https://www.history.navy.mil/research/histories/ship-histories/us-ship-force-levels.html#2000

About CFOAM Limited

CFOAM® is an inorganic carbon material that is manufactured from coal, pitch or lignin feedstock. CFOAM® manufactured in this process has a rigid foam structure, similar in appearance to pumice stone, but with entirely different properties. CFOAM® is currently used across a wide variety of markets including composite tooling for the aerospace sector, energy absorbing applications and defence applications. Additional markets such as the automotive applications for energy absorption and fire resistance are also expected become significant to the Company over time.

CFOAM® was developed to meet the growing demand for ultra-high-end performance engineering materials in the, industrial, aerospace, military and commercial product markets.

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