

SALMON  
 (/INTERPRET/S/TOPIC/OTO1O00...

## VR334\_Salmon\_v.1.2\_ 2.5.1

🕒 16-Mar-2020 · Knowledge

### ARTICLE RECORD TYPE

Variance Request - Standards

### PUBLICATION STATUS

Published

### TITLE

VR334\_Salmon\_v.1.2\_ 2.5.1

### DATE OF SUBMISSION

19/08/2019

### NAME OF CAB

[DNVNO \(/interpret/s/detail/0012400000ERDU3AAP\)](/interpret/s/detail/0012400000ERDU3AAP)

### SITE NAME

### PROSPECT / CERTIFICATE HOLDER

### ASC DOCUMENT INDICATOR/ CLAUSE

2.5.1

### COUNTRY

Norway

### ASC DOCUMENT INDICATOR/ CLAUSE 2

### CROSS REFERENCE TO OTHER VR'S / QA'S

### SPECIES

### DOCUMENT (REFERENCE)

Salmon

### ASC DOCUMENT INDICATOR/ CLAUSE 3

### VERSION

1.2

### ASC DOCUMENT INDICATOR/ CLAUSE 4

### PRINCIPLE

2

### CRITERION

2.5

### INDICATOR

2.5.1

### SUPPORTING EVIDENCE

### REGION ⓘ

### APPROVED REGION

### DATE INTERNAL CHECK STARTED

18/09/2019

## DATE INTERNAL CHECK FINISHED

16/03/2020

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### BACKGROUND<sup>1</sup>

Variance request to allow for the use of targeted acoustic startle technology (TAST) on ASC certified farms.

We have applied previously for another VR (VR 259) regarding criteria 2.5.1 at one of our farms, Rensøya N, which is ASC certified. This VR is still under assessment, but in support of it and in an attempt to find a solution to the animal welfare and salmon health issues related to the presence of seals around our farms, we have been investigating various alternative, non-lethal means to deter seals.

We appreciate the ASC's goals of environmental protection and healthy fish. ASC specifically prohibits the use of acoustic deterrence devices by certified farms under Standard 2.5.1. The newly available targeted acoustic startle technology (TAST) promotes both environmental protection and healthy fish; and we seek a variance to use TAST as a predator deterrent on ASC certified farms.

TAST was initially developed by researchers at the University of St. Andrews, and subsequently in conjunction with GenusWave. We have studied compelling research regarding the use of TAST which show that it offers a significant advance over traditional ADDs/AHDs.

TAST harnesses the acoustic startle reflex, which has been shown to induce avoidance behavior without a decrease in responsiveness over time in the majority of tested seals (Götz and Janik 2011). This approach only requires low noise doses by using:

brief, isolated sound pulses that are emitted at significantly lower duty cycles and lower source levels compared to ADDs.

Target-specificity is achieved by choosing a frequency band where hearing sensitivity in the target-species (seals) is higher than in non-target species (porpoise & dolphins).

This method has been shown to be successful in deterring seals from a fish farm while not adversely affecting the behavior and distribution of harbor porpoise (Götz and Janik 2015). The effect on seals was limited to a confined area around the fish farm of less than 250m.

Equally important is the long-term success of the deterrence. Target mammals do not habituate to TAST. Instead, repeated exposure increases animal responsiveness.

In a consecutive study, a startle-reflex based system reduced seal predation by ~91-97% on a fish farm over the course of one year while operating at a duty cycle of only 1% (Janik & Götz 2016). The device tested in this study emitted a noise dose that was more than one order of magnitude (more than factor 10) lower than any ADD. The 2nd study also replicated the previous result, i.e. that harbor porpoise distribution around the fish farm remained the same during control and test periods.

There is therefore no risk of hearing damage associated with this method when considering realistic exposure scenarios (see discussion and supplementary material)

As we previously mentioned in VR 259, Nordland County (where all our farms are located) has the highest estimated population of harbor seals (*Phoca vitulina*) in the whole of Norway. A study from the Norwegian Institute of Marine Research (Havforskningsinstituttet) found that 1.5 times more seals are estimated to live here than in the county with the second highest estimated population (Nilsen and Bjørge 2015). We have previously documented and informed the ASC of numerous instances of seals in close proximity to our farms, in some cases leading to panic swimming and other stress induced reactions from the salmon.

Using the TAST device will keep the seals away from our salmon which will provide our salmon with a more tranquil, less stressful and healthier environment.

TAST is more aptly described as an ASD (acoustic startle device), not an ADD, due its different approach and acoustic emission pattern. The TAST approach allows the:

noise dose to be lowered dramatically,  
effects on non-target species (harbor porpoise) to be mitigated,  
avoidance of harm to the target mammal.  
As a result, TAST achieves fish and mammal health as well as environmental compliance.

Therefore, instead of requesting permission to use an ADD, we are requesting the inclusion of this ASD in the allowed predator control measures. The justification is based on the fact that the TAST ASD is the only acoustic predator control solution available on the market whose efficacy and environmental compliance has been documented in peer-reviewed papers in the scientific literature.

TAST has been implemented in an industrial prototype and is available for use on fish farms as 'SalmonSafe' marketed through GenusWave Ltd. ([www.Genuswave.com](http://www.Genuswave.com) (<http://www.Genuswave.com>)).

It is also important to note that TAST will enable us to comply with Norwegian law. Norwegian law requires us to reduce stress on our salmon from predators (akvakulturdriftsforskriften, §30).

We believe that TAST is the only viable solution that provides improved welfare and health for our salmon. TAST avoids unnecessary stress (as required by Norwegian law (akvakulturdriftsforskriften, §30)) and avoids impact on other wildlife.

We therefore request the ASC's approval for the use of targeted acoustic startle technology on ASC certified farms.

## References

Nilssen, Kjell T. og Arne Bjørge. (2015) "Status for Kystsel." Havforskningsinstituttet.

<https://lovdata.no/dokument/SF/forskrift/2008-06-17-822> ("https://lovdata.no/dokument/SF/forskrift/2008-06-17-822")Forskrift om drift av akvakulturanlegg (akvakulturdriftsforskriften)." Nærings- og fiskeridepartementet, 2008.

Götz, T., & Janik, V. (2016). Non-lethal management of carnivore predation: long-term tests with a startle reflex-based deterrence system on a fish farm. *Animal Conservation*, 19(3), 212-221.

Götz, T., & Janik, V. (2015). Target-specific acoustic predator deterrence in the marine environment. *Animal Conservation*, 18(1), 102-111.

Götz, T. & Janik, V. (2013). Acoustic Deterrent Devices to Prevent Pinniped Depredation Efficiency, Conservation Concerns and Possible Solutions. *Marine Ecology Progress Series*. 492, 285–302.

Götz, T., & Janik, V. (2011). Repeated elicitation of the acoustic startle reflex leads to sensitisation in subsequent avoidance behaviour and induces fear conditioning. *BMC Neuroscience*, 12(1). doi: 10.1186/1471-2202-12-30.

Götz, T. & Janik, V. M. (2010). Aversiveness of Sounds in Phocid Seals: Psycho-Physiological Factors, Learning Processes and Motivation. *Journal of Experimental Biology*. 213, 1536-48.

Johnston, D. W. 2002. The effect of acoustic harassment devices on harbour porpoises (*Phocoena phocoena*) in the Bay of Fundy, Canada. Pages 113-118 *Biological Conservation*.

Morton, A. B., and H. K. Symonds. 2002. Displacement of *Orcinus orca* (L.) by high amplitude sound in British Columbia, Canada. *ICES Journal of Marine Science* 59:71-80.

Link to Norwegian aquaculture management regulation: <https://lovdata.no/dokument/SF/forskrift/2008-06-17-822> (<https://lovdata.no/dokument/SF/forskrift/2008-06-17-822>).

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## REQUEST/ RECOMMENDATION

DNV GL recommends that a Variance Request is granted to use targeted acoustic startle technology (TAST) on Nova Sea AS ASC certified farms considering the special circumstances in this area. Use of TAST to be recorded and evaluated per season. Nova Sea – VR letter 070819Variance Request NovaSeaAS 140819Variance Request NovaSeaAS 140819Nova Sea – VR letter 070819

Closed

**ASC DECISION**

Variation

**CABS ARE ALLOWED TO REUSE THIS VR**

**ASC DETERMINATION OF THE VR REQUEST**

Variation is approved

**TECHNICAL/SCIENTIFIC ADVICE WAS NEEDED?**

**DETERMINATION VALID UNTIL**

**NAMES OF ADVISORS**

**EFFECTIVE DATE**

16/03/2020

**SCIENTIFIC ADVICE WAS NEEDED?**

**VR STILL VALID?**

**COMMENTS FROM THE PUBLIC RECEIVED?**

**COMMENT ON VALIDITY**

**ASC INTERPRETATION**

Indicator 2.5.1 of the ASC Salmon Standard prohibits farms to use acoustic deterrent devices (ADDs) or acoustic harassment devices (AHDs). The rationale, as stated in the standard, is that available research at the time when the standard was developed, suggests that noise and high-pitched sounds resulting from existing acoustic devices can cause pain to marine mammals and can cause them to avoid areas that may be important for feeding, breeding and travel/migration. The rationale also allows for an exception to this requirement if there is clear scientific evidence that future acoustic technology presents significantly reduced risk to marine mammals. In this context, ASC acknowledges that the technology presented in this VR, the Targeted Acoustic Startle Technology (TAST), fulfil this criterion on significantly reduce the risk to marine mammals thus, it is approved to be used in certified farms.

Within the development of the aligned ASC Farm Standard (see <https://www.asc-aqua.org/what-we-do/our-standards/new-standards-and-reviews/new-farm-standards/aligned-standard/> (<https://www.asc-aqua.org/what-we-do/our-standards/new-standards-and-reviews/new-farm-standards/aligned-standard/>)) ASC will assess new scientific information on current and new acoustic technology thus, this VR may be revised.

**URL NAME**

VR334-Salmon-v-1-2-2-5-1

Salmon

(/interpret/s/topic/OTO1o00000...

**Files (0)** (</interpret/s/relatedlist/ka01o0000002FbrAAE/AttachedContentDocuments>)

FOLLOW

**TRENDING ARTICLES**

VR250\_Salmon\_v1.1\_6.10.1

(/interpret/s/article/VR250-Salmon-v1-1-6-10-1)

VR341\_CAR\_v2.1\_7.3.3, 7.3.5, 17.11.1.1

(/interpret/s/article/VR341-CAR-v2-1-7-3-3-7-3-5-17-11-1-1)

(/interpret/s/article/VR341-CAR-v-2-1-1-3-3-1-3-5-1-11-1-1)

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Q&A89CAR v2.1\_17.10.1.1 a) iii C1 Shrimp v1.1\_7.2.2

(/interpret/s/article/Q-A89CAR-v2-1-17-10-1-1-a-iii-C1-Shrimp-v1-1-7-2-2)

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Q&A101\_CAR\_V2.2\_17.4.2

(/interpret/s/article/Q-A101-CAR-V2-2-17-4-2)

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