Reporting impulsive noise to the ICES register - Danish guidelines

Jakob Tougaard

Baltic Marine Environment Protection Commission
Joint HELCOM-OSPAR workshop on data upload
ICES, Copenhagen, 3-4 Oct. 2023

Danish guidelines

- Agencies/ministries are responsible for collecting data about their own activities
- Environmental Protection Agency (EPA) coordinates, performs QA and reports to ICES
- ICES Excel sheet **not** used for reporting to EPA, as it is very difficult to understand for 'outsiders'
- Specific data sheets used for individual activities
  - Pile driving, large and small
  - Explosions
  - Seismic surveys
  - Sonars and other sources

Large pile driving

Need to know!

- Position of each pile
- Day piling started
- Day piling ended (if different from start)
- Size class of hammer
- Use of noise abatement

Nice to know

- Type of pile, material
- Pile diameter
- Start and end time of piling
- Maximum hammer energy
- Type of noise abatement
- Measured SEL_{SS}
- Measured L_{peak}
- Water depth
- Other relevant info

					ID or serial number	Mandatory information	4.2.1 Impact pile driver, large piles
					Start date		
					End date if different from start date		
					Latitude (WGS84)		
					Longitude (WGS84)		
					Maximum hammer energy (in kJ or MJ per impact or size class)		
					Use of noise abatement system (yes or no)		
					Type of pile. Monopile, jacket or conductor pipe	Non-mandatory information	
					Type of noise abatement system, if used (see instructions)		
					Start time (HH:MM)		
					End time (HH:MM)		
					Alternatively: total duration of the pile driving operation (HH:MM)		
					Sound exposure level (SEL), single pulse (dB re 1µPa^{2}s)		
					Peak sound pressure measured, single pulse, Lpeak (dB re 1µPa)		
					Distance from sound measurement to pile driver		
					Type of hammer (manufacturer and model)		
					Water depth		
					Diameter of the pile		
					Remarks		

Small pile driving (sheet piling etc)

Need to know!

- Location of piling (name of harbor or similar)
- Days with piling

Nice to know

- Type of pile, material
- Number of piles piled each day
- Type of hammer (model, hammer energy)
- Other relevant info, including whether piling was sheltered (inside harbour) or facing open water

											ID or serial number	Mandatory information	4.2.2 Impact pile driver, small piles
											Start date		
											Latitude (WGS84)		
											Longitude (WGS84)		
											Alternative: unique locality name (e.g.. Hanstholm Havn).		
											Type of pile: sheet piles, moorage pile, pier foundation etc.	Non-mandatory information	
											Material: steel, concrete or wood		
											Numbers of piles driven per day		
											Type of hammer (manufacturer and model)		
											Remarks and specification of where the pile driver was placed – in the harbour or outside the pier		

Explosions

Need to know!

- Position (precise or as ICES subrectangle)
- Date and time
- Size class of largest explosion, if each explosion is not reported separately

Nice to know

- TNT-equivalent size
- Number of explosions, if more than one
- Water depth
- Depth of explosion, if not on seabed
- Other relevant information, including type of explosion (UXO, construction) and whether abatement methods were used

4.2.3 Isolated explosions

Mandatory information						Non-mandatory information		
		Fill in length or ICES rectangle						
ID or serial number	Date and time for the explosion	Latitude (WGS84)	Longitude (WGS84)	ICES rectangle (see instructions)	Explosion size (TNT equivalent or size class, see instructions)	Water depth	Depth of explosion if not on the bottom	Remarks, including type of explosive and whether the explosion was fully or partly covered

4.2.4 More than one explosion

									ID or serial number		Mandatory information
									Date and time of the explosion		
									Latitude (WGS84)	Fill in length or ICES rectangle	
									Longitude (WGS84)		
									ICES rectangle (see instructions)		
									Size of the largest explosion (TNT equivalent or size class, see instructions)		
									Water depth (approximately)		Non-mandatory information
									Number of explosions (approximately)		
									Remarks, including type of explosive and purpose of the explosions		

Seismic airguns

Need to know!

- Date for survey
- Position (for well testing etc.) or ICES sub-rectangle (for surveys)
- Magnitude class of airgun

Nice to know

- Size of array (reported as source factor or total airgun volume and pressure)
- Start and stop time in rectangle, or total time on effort in each rectangle, each day
- Depth of array
- Ship speed
- Other relevant information

4.2.5 Seismic survey with airguns

One line for each ICES sub-rectangle on each day with an activity

Mandatory information						Non-mandatory information					
		Stationary sources		Moving sources		Start and end time		Total time			
ID or serial number	Date	Latitude (WGS84)	Longitude (WGS84)	ICES rectangle (see instructions)	Size of airgun array. Source factor or total volume of airgun (see instructions)	Start time for the moving source. Time when the ship entered the ICES rectangle	End time for the moving source. Time when the ship left the ICES rectangle	Total time with airguns in the rectangle per day	Depth of the airgun array	For moving sources: sailing speed	Remarks

Sonars

Need to know!

- Date
- ICES subrectangle
- Source level, in size classes

Nice to know

- Sonar frequency
- Pulse length and ping rate
- Total duration of transmissions
- Ship speed
- Directionality of sonar
- Other relevant information

4.2.6 Sonars

One line for each ICES sub-rectangle on each day with an activity

										ID or serial number	Mandatory information
										Date	
										ICES rectangle (see instructions)	
										Power of source. Can be specified as size class (see instructions)	
										Total duration of transmission in ICES rectangle per day (including intervals between pulses in series)	Non-mandatory information
										Frequency or frequency range	
										Duration of sonar pulses	
										Repetition rate of sonar pulses	
										Remarks, e.g. sailing speed	

ADDs (seal scarers)

Need to know!

- Date for deployment/activation
- Date for recovery/deactivation
- Position

Nice to know

- Type and model of ADD
- Other relevant information

4.2.7 Acoustic deterrent devices (seal scares etc.)

One line for each installation and each period of active acoustic deterrent devices

Mandatory information					Non-mandatory information	
ID or serial number	Start date	End date	Latitude (WGS84)	Longitude (WGS84)	Type of acoustic deterrent device (manufacturer and model)	Remarks, including details about the signal if not a commercial sound source