

MARINE OCCURRENCE REPORT

COLLISION

**BETWEEN THE LOADED BULK CARRIER
"FEDERAL OSLO" AND THE
FISHING VESSEL "SHELLEY DAWN II"
APPROXIMATELY 83 MILES SOUTH OF
HALIFAX, NOVA SCOTIA
10 APRIL 1994**

REPORT NUMBER M94M0009



The Transportation Safety Board of Canada (TSB) investigated this occurrence for the purpose of advancing transportation safety. It is not the function of the Board to assign fault or determine civil or criminal liability.

Marine Occurrence Report

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"FEDERAL OSLO" and the
Fishing Vessel "SHELLEY DAWN II"
approximately 83 miles south of
Halifax, Nova Scotia
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Synopsis

At night, in poor visibility, the "FEDERAL OSLO" was proceeding at a full speed of 13.5 knots, from Wilmington, Delaware, USA, to Contrecoeur, Quebec, when she collided with the stationary fishing vessel "SHELLEY DAWN II". Both vessels sustained minor damage. No one was injured and there was no pollution.

The Board determined that the collision between the "FEDERAL OSLO" and the "SHELLEY DAWN II" occurred because neither vessel was maintaining a proper look-out and the "FEDERAL OSLO" had not reduced speed in fog.

Ce rapport est également disponible en français.

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1.0 Factual Information

1.1 Particulars of the Vessels

	"FEDERAL" OSLO"	"SHELLEY DAWN II"
Official Number	01099	808226
Port of Registry	Bergen, Norway	Shelburne, Nova Scotia
Flag	Norwegian	Canadian
Type	Bulk/General cargo	Fishing
Gross Tons ¹	17,755	29
Cargo	18,000 tonnes of One tonne titanium slag	of cod
Length	183.3 m	11.3 m
Breadth	23.1 m	4.5 m
Draught	F ² : 7.26 m A: 8.94 m	1.2 m approx.
Built	1985, Japan	1986, Nova Scotia
Propulsion	One six-cylinder Burmeister & Wain diesel engine, rated 6,167 kW, driving a single fixed-pitch propeller	One Detroit diesel engine, rated 110 kW, driving a single fixed-pitch propeller
Crew	26	4
Owners	Tordenskjold, Norway	David Thornburn, Nova Scotia

- Units of measurement in this report conform to International Maritime Organization (IMO) standards or, where there is no such standard, are expressed in the International System (SI) of units.
- See Glossary for all abbreviations, acronyms, and definitions.

1.1.1 Description of the Vessels

The "FEDERAL OSLO" is a general cargo/bulk carrier with accommodation, open-winged bridge and engine-room located aft.

The "SHELLEY DAWN II" is a typical Cape Island fishing vessel with her wheel-house located forward of amidships and

an open afterdeck from which the fishing operation is conducted.

1.2 History of the Voyages

"FEDERAL OSLO"

On the evening of 10 April 1994, the "FEDERAL OSLO" was steering a north-easterly course by autopilot and was heading for the Cabot Strait. The visibility had deteriorated during the evening hours and it was reported that the vessel was making the appropriate fog signal. The speed of the vessel was maintained at 13.5 knots (kn) and the master had the conduct. The only other person on the bridge was the officer of the watch (OOW).

Two radar sets were monitored independently by the master and the OOW. All the windows and the port-side door to the wheel-house were closed but the starboard door, on the lee side, was open.

Suddenly, in approximate position 43°12'N, 63°47'W, the master observed a bright, white light close to and almost abeam on the port side of his vessel. He immediately ordered the OOW to disengage the autopilot and to put the

helm hard-a-port to take the stern of his vessel away from the fishing vessel which was bumping down his port side. It was about 2122³. Engine revolutions were reduced to slow ahead and the master rushed to the bridge wing in time to see the unidentified vessel clear the stern of his own ship.

"SHELLEY DAWN II"

The "SHELLEY DAWN II" had laid her longlining gear during the day of 10 April, just east of the La Have Bank (see Appendix A). Immediately before the collision, she was stopped in the water with her engine idling. No sound signal was being made. All four crew members were in the process of hauling back the fishing gear. In the unmanned

wheel-house, one of the two radar sets was turned off and the other was on stand-by. None of the crew members were aware of the presence of the "FEDERAL OSLO" until that vessel was alongside their vessel's port side.

1.3 *Injuries to Persons*

No one was injured.

3 All times are ADT (Coordinated Universal Time (UTC) minus three hours) unless otherwise stated.

1.4 *Damage*

"FEDERAL OSLO"

A subsequent inspection of the hull of the "FEDERAL OSLO" revealed scuff marks on the port-side shell plating adjacent to the No. 2 hatch and the amidships draught markings. The scuff marks extended from the waterline to approximately one metre above it.

"SHELLEY DAWN II"

The "SHELLEY DAWN II" was inspected upon her return to port and the following damage was observed:

- a deck fracture in the area of the port bow;
- port and starboard bulwark rail cap fractured at the stem scarf;
- in the wheel-house, the port-side windows and the horizontal plate through which the engine exhaust pipe passes were leaking;
- the very high frequency radiotelephone and the cellular telephone antennas were both broken; and
- approximately 1,800 m of longline fishing gear was lost.

1.5 *Certification*

"FEDERAL OSLO"

The "FEDERAL OSLO" was certificated, manned and equipped in accordance with existing regulations.

"SHELLEY DAWN II"

The "SHELLEY DAWN II" had a valid inspection certificate (SIC 29), but its validity was contingent upon the log card of each inflatable liferaft carried being endorsed annually by the supplier's accredited service person. This endorsement had not been made since 20 November 1990.

1.5.1 *Qualifications of Personnel*

"FEDERAL OSLO"

Both the master and the OOW of the "FEDERAL OSLO" held qualifications appropriate for the class of vessel on which they were serving and for the voyage being undertaken. Both had completed radar (Automatic Radar Plotting Aid (ARPA)) courses. Although the radar certificates issued to the OOW became invalid in 1991, his Certificate of Competency was still valid.

"SHELLEY DAWN II"

The operator of the "SHELLEY DAWN II" did not possess a Certificate of Competency nor was he required by regulation to be certificated.

1.6 *History of Personnel*

"FEDERAL OSLO"

The master had served in this capacity since 1984 and had been appointed to this vessel in March 1994. He had no previous experience in the eastern Canadian waters.

The OOW had served in this capacity since 1990 and had been appointed to this vessel in January 1994.

"SHELLEY DAWN II"

The operator had been skipper for 25 years, the last 7 1/2 of which had been on this vessel. He had been fishing in the eastern Canadian waters for 31 years.

1.7 *Environmental Information*

1.7.1 *Weather Forecast from Maritimes Weather Centre*

The wind was from the south-west at 30 to 35 kn then shifting to the west at 20 to 30 kn at about 2400. Visibility was poor. Light rain was falling and there were occasional moderate showers. Seas were at 2,5 to 3 m.

1.7.2 *Weather as Recorded by the "FEDERAL OSLO"*

At 2000, the "FEDERAL OSLO" recorded the weather as "Wind south, force 7" (Beaufort scale = 30 kn). A generalized summary for the period 2000 to 2400 read: "Zero visibility, heavy rain shower, rough seas and moderate swell."

1.7.3 *Weather as Reported by the "SHELLEY DAWN II"*

Weather conditions are generally not recorded aboard fishing vessels, but the operator was able to recall that, immediately before the collision, winds were south-westerly at 25 to 30 kn with 2 to 3 m seas, and that visibility was 0.25 to 0.5 mile because of fog and rain.

1.8 *Navigation Equipment*

"FEDERAL OSLO"

The vessel is equipped with the following principal navigation aids (those marked with an asterisk (*) were in use at the time of the occurrence):

- two marine radars (3 cm)*, one of which is an ARPA model equipped with conventional Plan Position Indicator (PPI) displays and daylight viewing visors;
- autopilot, gyrocompass*, Loran C navigator*, and satellite navigator*;
- depth-sounder, radio direction finder, magnetic compass* and an appropriate chart for the area;
- navigation lights* and an automatic electrical whistle*.

"SHELLEY DAWN II"

The vessel was equipped with the following navigational aids:

- two marine radars (3 cm);

- depth-sounder*, three Loran C navigators* and a magnetic compass*;
and
- navigation lights* and a hand-operated electrical sound-signalling device.

1.8.1 Serviceability, Procedures and Use of the Navigation Equipment

Both radar sets aboard the "FEDERAL OSLO" were checked by a technician at Contrecoeur, Quebec, and found to be functioning normally.

The master of the vessel, who had been monitoring the ARPA set, indicated that sea clutter extended to about two miles but that small targets, believed to be fishing vessels, had been detected.

The OOW indicated that, on the other radar set, rain clutter was more of a problem than sea clutter.

Regardless of these facts, neither the master nor the OOW detected the echo of the "SHELLEY DAWN II" on the radar set they were monitoring.

1.8.2 Radar Reflectors

The "SHELLEY DAWN II" was fitted with a 45 cm radar reflector mounted atop her foremast approximately 9 m above the waterline. In addition, on her afterdeck, there were six marker buoys (high flyers) each topped with a 30 cm radar reflector and situated some 3 m above the waterline.

The "SHELLEY DAWN II" had been identified as a radar target by the fishing vessel "STEPHEN ROBERT" when the two vessels were approximately 0.75 mile apart.

1.9 Bridge Resource Management

The crew of the "FEDERAL OSLO" was made up of three nationalities. English was the working language and there was no report of communications problems.

Because of the restricted visibility, the master had been on the bridge and had assumed the conduct of the vessel since 1800. The appointed able seaman (AB) for the first watch (2000-2400) had been delegated to sound the ballast tanks. No relief deck-hand was called to replace him.

The OOW had expressed his concern to the master that there was no look-out posted. The master decided that a look-out and the use of manual steering were not necessary at that time.

1.10 Radio Communications

Before the collision, neither vessel made a radio security call to advise other vessels in the area of their presence.

After the collision, radio communication was established between the vessels and, by this means, the "FEDERAL OSLO" was able to determine the identity of the vessel with which she had collided.

At the request of the "SHELLEY DAWN II", a Canadian Coast Guard Radio Station was advised of the accident by the "FEDERAL OSLO".

2.0 *Analysis*

2.1 *Introduction*

The conduct of a seagoing vessel in any condition of visibility is governed by the rules of the International Regulations for Preventing Collisions at Sea. It is every vessel's responsibility to apply these rules.

A proper look-out must be kept, and a safe speed maintained, at all times, particularly in restricted visibility.

Whenever a vessel is in or near an area of restricted visibility, she is required to make a sound signal at prescribed intervals. The signal indicates to another mariner the type of vessel sounding the signal and her status in the water.

2.2 *Look-out*

Visibility was between zero and one-half mile. Although both the master and the OOW of the "FEDERAL OSLO" were each monitoring a radar, neither detected the presence of the "SHELLEY DAWN II". As the watch AB was sounding tanks, there was no dedicated visual look-out posted who would have been better able to see the fishing vessel's bright working lights sooner than the master and OOW who were mainly preoccupied with their respective radars.

Although both the "FEDERAL OSLO" radars were reported to be operating satisfactorily and the "SHELLEY DAWN II" was fitted with a passive radar reflector and had on board six marker buoys also fitted with radar reflectors, the "SHELLEY DAWN II" was not seen by radar by the "FEDERAL OSLO".

The radar target of the "SHELLEY DAWN II" was detected by the fishing vessel "STEPHEN ROBERT" at a distance of 0.75 mile.

Given the difference in height of the radar antennas of the "FEDERAL OSLO" and

the fishing vessel, the problems of sea and rain clutter experienced by the fishing vessel must have been equal to or worse than those reported by the "FEDERAL OSLO". In addition, the movement of the fishing vessel in the sea would have been considerably greater than that of the cargo vessel.

The "SHELLEY DAWN II" was lying to her gear in a south-west/north-east direction. As the vessels scraped each other's port side, the "SHELLEY DAWN II" must have been lying to her gear on the course line of the "FEDERAL OSLO". It is possible that the radar echo of the "SHELLEY DAWN II" was obscured for a time under the heading marker of the radars of the "FEDERAL OSLO".

The "FEDERAL OSLO" was steering a north-easterly course with a force 7 south-westerly gale blowing from astern. In the circumstances, the vessel would probably have been yawing considerably. The radar target of the "SHELLEY DAWN II" would have been difficult to detect but it would not have been obscured permanently by the heading marker.

Since the "STEPHEN ROBERT" detected the "SHELLEY DAWN II" by radar and the "FEDERAL OSLO" did not, the strength of the "SHELLEY DAWN II" radar echo was not a factor. However, for whatever reasons, the radar echo of the "SHELLEY DAWN II" was not detected by the radar watch being kept by the "FEDERAL OSLO".

As all four crew members of the "SHELLEY DAWN II" were engaged in handling fishing gear, the wheel-house was unattended. At the time of the collision, no visual or radar look-out was being kept.

2.3 *Speed*

The "FEDERAL OSLO" was proceeding at a speed of about 13.5 kn immediately before the collision. The visibility was between zero and one-half mile and the "FEDERAL OSLO" was aware of the presence of fishing vessels in her immediate vicinity. The speed of the vessel was

such that she could not have been stopped within a distance appropriate to the prevailing circumstances and conditions. The vessel did not need to proceed at full ahead to maintain her schedule.

2.4 *Sound Signals*

Both the master and the OOW of the "FEDERAL OSLO" stated that the vessel was sounding a fog signal and that the signal was being generated automatically. They did not agree on the composition of the signal. When the signal was tested, the automatic mode produced the standard sound signal for a power-driven vessel under way, a prolonged blast of approximately six seconds every two minutes. Presumably, given that the ship's whistle was activated, this was the signal being generated before the collision.

There is some doubt that the signal was being sounded by the "FEDERAL OSLO" as none was heard before the collision by the "SHELLEY DAWN II". The Canadian fishing vessel "STEPHEN ROBERT" also passed close to the "FEDERAL OSLO" after the collision but did not hear a sound signal.

2.5 *The Use of Automatic Steering*

Automatic steering is normally employed in good visibility and where it is not likely that alterations of course will be required quickly. Manual steering enables more rapid alterations of course. It takes some seconds to change over from the automatic to the manual mode and it requires that a helmsman be available to take over the vessel's steering. Despite the restricted visibility and the knowledge that there were fishing vessels in the immediate area, manual steering was not employed and the command to alter course was ineffective.

2.6 *Bridge Resource Management*

"FEDERAL OSLO"

Both the master and the OOW were monitoring the vessel's radars; however, neither sighted the "SHELLEY DAWN II" by this

means. As the "SHELLEY DAWN II" was known to be presenting a good radar image to another vessel, it is difficult to understand why the "SHELLEY DAWN II" was not seen on the radar screens of the "FEDERAL OSLO". As there was no visual watch being kept because the watch AB had been assigned other tasks, the resources available to maintain an effective watch were not used to advantage.

"SHELLEY DAWN II"

For economic reasons, the vessel's crew had been reduced to four. When fishing gear was being recovered, all hands were required for this task. There was no one to maintain a look-out during the time the gear was being recovered.

3.0 *Conclusions*

look-out and the "FEDERAL OSLO" had not reduced speed in fog.

3.1 *Findings*

"FEDERAL OSLO"

During a period of reduced visibility:

1. The personnel available to establish a bridge resource management regime were not used to maximum advantage.
2. No dedicated look-out was posted.
3. The speed of the vessel was not reduced while in the known presence of fishing vessels in the area.
4. It is uncertain if a fog signal was being sounded.
5. The vessel was in the automatic steering mode.
6. The time required to engage manual steering to carry a major alteration of course rendered the alteration ineffective.
7. The watch able seaman (AB) was not on the bridge.

"SHELLEY DAWN II"

8. The wheel-house was left unmanned while recovering fishing gear.
9. Neither radar was in the operating mode.
10. There was no dedicated look-out.
11. No fog signal was being sounded.

3.2 *Causes*

The collision between the "FEDERAL OSLO" and the "SHELLEY DAWN II" occurred because neither vessel was maintaining a proper

4.0 *Safety Action*

4.1 *Action Taken*

4.1.1 *Small Fishing Vessel Crew Certification*

In its report on a 1992 collision between the two fishing vessels "RYAN ATLANTIC" and "CONNIE & SISTERS I" (TSB Report No. M92M4031), the Board expressed its concern that inadequately trained personnel on fishing vessels contribute to the frequency and the severity of such marine occurrences. Consequently, the Board recommended that:

The Department of Transport ensure that any person required to have the conduct of a commercial fishing vessel possess the basic skills for safe navigation.

(M94-10, issued July 1994)

In its response, the Canadian Coast Guard (CCG) recognized the safety impact of inadequately trained personnel and advised that it is presently revising the Certification and Safe Manning Regulations to require certification and training for officers on fishing vessels 80 gross registered tons (GRT) and over. It is understood that the CCG plans to increase the certification requirements in the areas of navigation safety, radar use, Marine Emergency Duties (MED), and stability. The forthcoming revisions to regulations will be phased over two years to apply to vessels of 60 GRT, and eventually to fishing vessels as low as 15 GRT.

The CCG also indicated that, in conjunction with the Department of Fisheries and Oceans (DFO), it supports a number of national fishermen training centres and a mobile training unit in navigation for small fishing ports in Nova Scotia.

4.2 *Action Required*

4.2.1 *Radar Detection*

Small fishing vessels are often built of wood or plastic materials and have a low freeboard. Because they do not expose much reflective material to radar transmissions, they are frequently undetected and sometimes run down by larger vessels. The CCG has published a *Small Fishing Vessel Safety Manual* (TP 10038) that summarizes the performance requirements of radar reflectors contained in the Collision Regulations as follows:

Radar reflectors are required for vessels less than 20 metres long, and for all non-metal vessels, and should be located above all superstructure at least 4 metres above the water if possible.

The "SHELLEY DAWN II" met these criteria, but it would have been difficult to detect her by radar in the prevailing weather conditions.

In the last 10 years, in the Maritime provinces alone, fishing vessels of various sizes were involved in at least 56 open-sea collisions. Poor appreciation of radar in fog was a contributing factor in 29 of these occurrences.

Merchant mariners that transit fishing areas in periods of fog, rain and moderate seas, rely heavily on their radar to detect the presence of other vessels. Applying sea and rain anti-clutter to reduce undesirable returns on radar screens can mask the presence of small radar targets at close range. In order to strengthen radar echoes, fishermen normally use radar reflectors of various sizes. Radar reflectors vary in size, shape and material. The detection of these vessels can, however, become intermittent when the reflector disappears in the trough of a swell or large waves.

The Board is concerned that radar reflectors installed on small fishing vessels operating offshore in all types of weather may not always be detectable. Therefore, the Board recommends that:

The Department of Transport warn fishermen of the detection limits of radar reflectors on small fishing vessels

and promote radar reflectors designed to ensure maximum reflective performance; and

M94-19

The Department of Transport investigate the feasibility of expanding the use of appropriate radar transponders on small fishing vessels.

M94-20

4.3 *Safety Concern*

4.3.1 *Crew Certification*

The International Maritime Organization (IMO) recognizes that the most frequent cause of marine collisions involving fishing vessels in the open sea has been the failure to maintain an adequate navigational watch. The practice of leaving the wheel-house to tend to fishing gear has serious potential consequences.

The navigating personnel on both the "FEDERAL OSLO" and the "SHELLEY DAWN II" did not perform a series of established collision avoidance procedures in reduced visibility such as switching the autopilot off and posting a helmsman for manual steering, sounding fog signals at the prescribed intervals, stationing a dedicated visual look-out, reducing speed, and making radio security calls. Such failures are not isolated. TSB records indicate that, in the last 10 years, in relatively open waters, there were over 147 collisions in Canada between fishing vessels of various sizes. Of these collisions, 94 involved vessels under 50 GRT and 32 involved vessels between 50 and 100 GRT. Fishing vessels were also involved in 11 collisions with large cargo vessels and in 20 other collisions with tugs and barges.

Of all reported occurrences in Canada, the most frequently cited causes of collisions were imprudent actions, inattention or poor look-out, lack of appreciation of radar information, lack of

fog signals, and lack of radio communication. These causes indicate a disregard for basic seamanship and collision avoidance procedures.

Once again, the Board is concerned that many fishermen demonstrate a lack of professional competency in navigation, seamanship, safety, and survival skills to operate fishing vessels of less than 100 GRT. Since these vessels constitute over 95 per cent of the registered Canadian fishing fleet, there is serious potential for damage and loss of lives.

The Board recognizes that current CCG revisions to the Certification and Safe Manning Regulations will have an impact on fishing vessel safety but, in the interim, a significant number of fishermen on small vessels will not be required to demonstrate their basic navigational skills and knowledge. However, the Board believes that effective implementation of the revised regulations will lead to a long-term reduction of similar occurrences.

This report concludes the Transportation Safety Board's investigation into this occurrence. Consequently, the Board, consisting of Chairperson, John W. Stants, and members Gerald E. Bennett, Zita Brunet, the Hon. Wilfred R. DuPont and Hugh MacNeil, authorized the release of this report on 24 November 1994.

Appendix A - Sketch of the Area

Appendix B - Photographs

Appendix C - Glossary

A	aft
AB	able seaman
ADT	Atlantic daylight time
ARPA	Automatic Radar Plotting Aid
CCG	Canadian Coast Guard
cm	centimetre(s)
DFO	Department of Fisheries and Oceans
F	forward
GRT	gross registered ton(s)
IMO	International Maritime Organization
kn	knot(s): nautical mile(s) per hour
kW	kilowatt(s)
m	metre(s)
MED	Marine Emergency Duties
N	north
OOW	officer of the watch
PPI	Plan Position Indicator (radar screen)
rain clutter	Radar echoes reflected from precipitation and obscuring some areas of the PPI. The amount of rain clutter depends on the type of radar used and the density of the precipitation. Its effect can be attenuated by the rain clutter control.
sea clutter	Radar echoes reflected from the surface of the sea and obscuring some areas of the PPI, usually near the centre. The amount of sea clutter depends on the type of radar used, antenna height, state of the sea, and atmosphere. Its effect can be attenuated by the sea clutter control.
SI	International System (of units)
SIC	Steamship Inspection Certificate
TSB	Transportation Safety Board of Canada
UTC	Coordinated Universal Time
W	west
°	degree(s)
'	minute(s)