



**TRANSPORTATION SAFETY BOARD OF CANADA
BOARD CONCERN M06W0052**

DATE ISSUED: 17 October 2007

FORWARDED TO:

Mr. David Hahn, President and Chief Executive Officer,
BC Ferries

c.c. The Honourable Lawrence Cannon, Minister of Transport, Infrastructure and Communities

SUBJECT: Cannabis Use by Crew Members in BC Ferries' Northern Fleet

Background

At 2000 Pacific standard time on 21 March 2006, the passenger and vehicle ferry *Queen of the North* departed Prince Rupert, British Columbia, for Port Hardy, British Columbia. On board were 59 passengers and 42 crew members. After entering Wright Sound from Grenville Channel, the vessel struck the northeast side of Gil Island at approximately 0021 on March 22 (TSB occurrence M06W0052). The vessel sustained extensive damage to its hull, lost its propulsion, and drifted for about 1 hour 17 minutes before it sank in 430 m of water. Passengers and crew abandoned the vessel before it sank. Two passengers were unaccounted for after the abandonment and have since been declared dead.

Use of Cannabis on the *Queen of the North*

In the course of the investigation into the sinking of the *Queen of the North*, the TSB conducted extensive interviews and found that a number of crew members regularly smoked cannabis between shifts, both on board and off the vessel.

There is no evidence that the performance of either the fourth officer or the quartermaster on the bridge that night was impaired.



Effects of Cannabis on Performance

A large number of studies have shown that cannabis use can lead to significant impairment of a wide range of human performance characteristics.^{1, 2} Although these studies have mainly focused on car driver and aviation pilot performance, the types of impairment are also clearly important to the variety of tasks required for the safe operation of vessels.

Cannabis use can impair psychomotor performance, memory, attention, and coordination.¹ Cannabis use has been shown to affect the ability to quickly react to complex or unexpected scenarios.²

The impairment due to a single dose of cannabis is greatest during the initial “high”³ after which the impairment reduces but may last 24 hours. Although cannabis users are commonly aware of the initial period of impairment, they are not normally aware of the longer-term effects.^{4, 2}

Any impairment of employees who perform safety-critical tasks in the transportation industry is a clear risk to safety – whether due to impairment while on duty, or during off-duty periods if required to carry out emergency functions.

Effective Action and BC Ferries

In the transportation industry, effective action is required to ensure that the public and the environment are not placed at risk by crews whose performance has been affected by drugs or alcohol. Effective action usually involves a combination of measures including clear policies, an employee assistance program, education, reporting systems, enhanced supervision, and methods to detect impairment and the associated risk to safety. Although many of these are in place at BC Ferries, some could be more effective while others merit consideration for inclusion.

BC Ferries has a no-tolerance policy with respect to alcohol and drugs. For live-aboard vessels, such as the *Queen of the North*, crew members are not permitted to consume nor have in their possession alcohol or any other mood-altering substance, which would render them unfit for duty. This prohibition is considered to include all hours on duty or off duty/watch, from the

¹ *Accidents and Incidents Involving Alcohol and Drugs in Australian Civil Aviation, 01 January 1975 to 31 March 2006*, Australian Transportation Safety Board, Aviation Safety Research and Analysis Report B2006/0169.

² A.M. Smiley, “Marijuana: on Road and Driving Simulator Studies,” in H. Kalant, W. Corrigal, W. Hall, R. Smart, (eds.) *The Health Effects of Cannabis*, Toronto, Addiction Research Foundation, 1999, pp. 173-91.

³ *Guidelines for the Accident Investigator in the Interpretation of Positive THC (Cannabinoids) Results*, produced by Dr. Vern Davis for the Transportation Safety Board of Canada, 2001.

⁴ V. Leirer, J. Yesavage, and D. Morrow, “Marijuana Carry-Over Effects on Aircraft Pilot Performance,” *Aviation, Space, and Environmental Medicine*, March 1991, pp. 221-227.

time an employee joins the ship until release for rest days.⁵ In addition to the policy, an employee-assistance program provider is available for counseling and assisting BC Ferries employees with alcohol and drug dependencies.

BC Ferries provides information concerning the drug and alcohol policy when crew members first join a vessel. However, the TSB investigation revealed that the *Queen of the North* crew members who were regularly using cannabis showed insufficient awareness of its impact on fitness for duty. As the effects of cannabis can last for 24 hours, there is a risk that performance will be diminished on the next shift or during their rest period should users be called for emergency duties.

BC Ferries has a Voluntary Individual Safety Observation Reporting System (VISORS) for employees to report directly on operational safety issues or concerns. However, there is a reluctance to report safety concerns because employees are required to sign their name on the form.⁶

Senior crew and management also play a role in ensuring that crew members conduct their duties in a safe and efficient manner and that their performance is not impaired by drugs and alcohol. There is some evidence to suggest that not all senior crew members aboard the *Queen of the North* consistently took sufficient action to ensure the company's no-tolerance policy was strictly adhered to.

Board Concern

There is no evidence that the performance of either the fourth officer or the quartermaster on the bridge that night was impaired.

However, there is strong evidence of regular use of cannabis by crews on board the *Queen of the North*. Given the documented effects on performance and the risk to passengers and the environment, the Board considers the use of cannabis by crews of vessels to be an unsafe condition, one that could lead to a serious accident.

In expressing its concern and highlighting the risk, the Board believes that BC Ferries is in the best position to determine whether this behaviour is present on board other vessels in its northern fleet. As a first step, BC Ferries should determine whether cannabis is in use by crews of other vessels or whether it was isolated to the *Queen of the North*. This should include a review of the effectiveness of the company's policy on alcohol/drugs.

The Board further encourages BC Ferries to address the issue without delay and to advise the TSB of the measures taken to ensure that the public and the environment are not placed at risk by crews whose performance has been impaired.

⁵ BC Ferries, *Come Sail With Us*, (G) General Policy: Alcohol/Drugs, p. 62-63.

⁶ G.L. Morfitt, *Safety and B.C. Ferries: A Review of Operational Safety at British Columbia Ferry Services, Inc.*, January 2007, p. 33.

The Board will be monitoring the progress on this important safety issue and will be reporting on it in its final report into the sinking of the *Queen of the North*.

A handwritten signature in cursive script that reads "Wendy A. Tadros".

Wendy A. Tadros
Chair
on behalf of the Board