Subject: **Marine Safety actions needed for Duluth Ship Canal - Chat GPT 9.5.23**

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Safety in the Duluth Ship Canal, located on Lake Superior in Minnesota, is crucial for the smooth operation of maritime traffic and the protection of the environment. Here are some marine safety actions and considerations needed for the Duluth Ship Canal:

1. Navigation Aids:
   - Maintain and regularly update navigational aids such as buoys, lights, and markers to guide vessels safely through the canal, especially during adverse weather conditions.
2. Dredging and Maintenance:
   - Regularly dredge the canal to ensure a sufficient depth for vessels to navigate safely. Remove silt and debris that can impede navigation.
3. Weather Monitoring:
   - Establish a robust system for monitoring weather conditions, including wind, waves, and visibility. Provide timely weather updates to vessel operators.
4. Communication:
   - Enhance communication systems between vessels, the canal operators, and relevant authorities to ensure the safe passage of ships through the canal.
5. Traffic Management:
   - Implement traffic management protocols to prevent congestion and collisions within the canal. Establish rules for right-of-way and safe passing.
6. Pilot Services:
   - Provide experienced and knowledgeable pilots who are familiar with the canal's unique challenges to assist vessels during their passage.
7. Emergency Response:
   - Develop and rehearse emergency response plans for incidents such as vessel groundings, spills, or accidents to minimize environmental damage and protect lives.
8. Environmental Protection:
   - Implement measures to prevent or mitigate environmental impacts, including oil spill containment and response strategies.
9. Security:

- Enhance security measures to protect against unauthorized access to critical infrastructure and to ensure the safety of vessels and crew.

10. **Training and Education**:
    - Offer training and educational programs for vessel operators, pilots, and canal staff to enhance awareness of safety protocols and best practices.
11. **Regular Inspections**:
    - Conduct regular inspections of canal infrastructure, including locks, gates, and bridges, to identify and address any maintenance or safety issues promptly.
12. **Environmental Monitoring:**
    - Continuously monitor the environmental conditions in and around the canal, including water quality and aquatic life, to identify any adverse impacts and take corrective actions.
13. **Coordination with Agencies:**
    - Collaborate with relevant federal, state, and local agencies, as well as environmental organizations, to ensure that safety measures are comprehensive and effective.
14. **Public Awareness:**
    - Educate the public about the importance of marine safety and the role they can play in promoting safe practices around the canal.

Summary: **These safety actions and considerations are essential to maintaining the Duluth Ship Canal as a safe and efficient maritime corridor while protecting the surrounding environment and ensuring the well-being of all involved stakeholders.**

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PARKING
VEHICLE ID
REQUIRED
UP TO $200 FINE
FOR VIOLATION
Life Jackets
Worn...
Nobody
Mourns

I. System Description

A. Functions

1) The water current is read at 15 second intervals.

2) Every 5 minutes (20 readings) the average water current value is computed and

a) appended to the hard disk along with the time
b) the screen display is updated
c) the signal lights at the bridge are updated

The water current conditions represented by the signal lights are defined as

Light Status	Water Current Conditions
Yellow	less than 1 mph - inbound or outbound
steady red	greater than or equal to 1 mph but less than 3 mph - inbound
steady green	greater than or equal to 1 mph but less than 3 mph - outbound
flashing red	greater than or equal to 3 mph - inbound
flashing green	greater than or equal to 3 mph - outbound

3) Every week (2016 averaged readings): the contents of latest hard disk file are transferred to floppy disk.

B. Components (refer to Figure 1.)

1) Model 201 Marsh-McBirney water current meter with output option and model 711 bi-directional probe

The Meter is located in the basement of the Corps Administration Building.

The probe is attached to the end of a pipe that is installed within a 6 inch diameter well casing. This casing has a 35 degree angle from horizontal and protrudes through the sheet pile wall of the North Pier approximately 17 feet below Low Water Datum. A metal plate covers the access to the top of the casing and is located in the grassy area adjacent to the Corps Administration Building. The probe is about 9 inches long with the base protruding approximately 5 inches from the bottom of the casing.

2) IBM personal computer with A/D board

The computer is located in the basement of the Corps Administration building. It reads, displays, and stores water current data and determines signal light logic. Note: The A/D board will not function with the expanded memory board installed.

3) Interface / line driver unit

This box is situated near and connected to the computer. It contains the necessary circuitry to a) provide DC power to the water current meter; b) convert signal light logic to currents required for line transmission to the signal light driver; and c) define the flashing rate, when appropriate, of the signal lights.

4) Signal light driver

This box is located in the work area in the base of the North Tower of the Aerial Lift Bridge. It contains the necessary circuitry to power the appropriate signal lights when triggered by the interface / line driver unit.


S Lake Av
8th St


S Lake Av