CONVENTIONAL BARGE ANCHORING TECHNIQUES AND AVOIDANCE METHODS

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ABSTRACT

This report reviews the anchoring system components for conventional pipelay barges. It also details how barges use their anchoring systems to avoid biologically sensitive seafloor areas while laying flowlines.

TOPICS

Anchoring System Components

- **Typical conventional barges & their sizes**
- **Towing tugs**
- **Winches**
  - **Tug**
  - **Barge**
- **Anchor wires**
- **Fairleaders**
- **Anchor types**
  - **Flipper**
  - **Stockless**
  - **Anchor holding capacity – sand**
  - **Anchor holding capacity – clay**
- **Pendant wires**

TOPICS (continued)

- **Pendant buoys**
  - **Horizontal can**
  - **Vertical can**
  - **Complete pendant buoy, wire, anchor**
- **Midline buoys**
- **Under-running sheave**
- **Animated standard barge anchoring procedure**
- **Animated avoidance of biologically sensitive areas**
- **Contingencies**
  - **Anchor wire parting**
  - **Pendant wire parting**
- **Recommendations and conclusion**

TYPICAL CONVENTIONAL BARGES & THEIR SIZES

GP-37

Shallow water lay barge (0–225 fsw)
Dimensions – 188’ x 60’ x 14’
Eight-point anchor system

SEA CONTRUCTOR

Intermediate water depth lay barge (226–600 fsw)
Dimensions – 250’ x 72’ x 16’
Seven-point anchor system

CHEROKEE

Intermediate to deep water depth lay barge (226–1000 fsw)
DIMENSIONS – 387’ x 100’ x 25’
Eight-point anchor system

GP-37

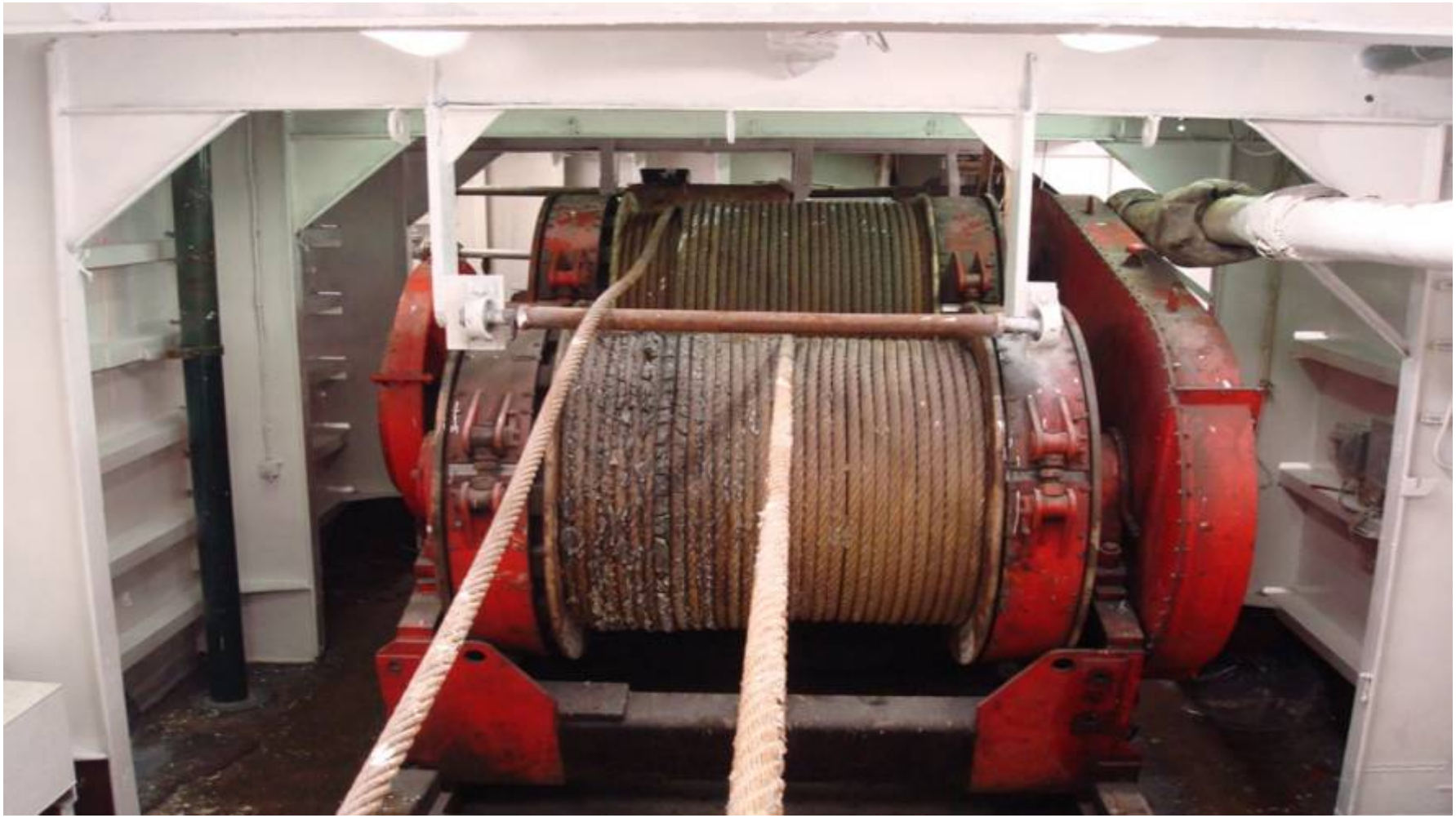
SEA CONSTRUCTOR

CHEROKEE

TOWING TUGS

TUG WINCH

BARGE WINCH



ANCHOR WIRE

BARGE FAIRLEADER

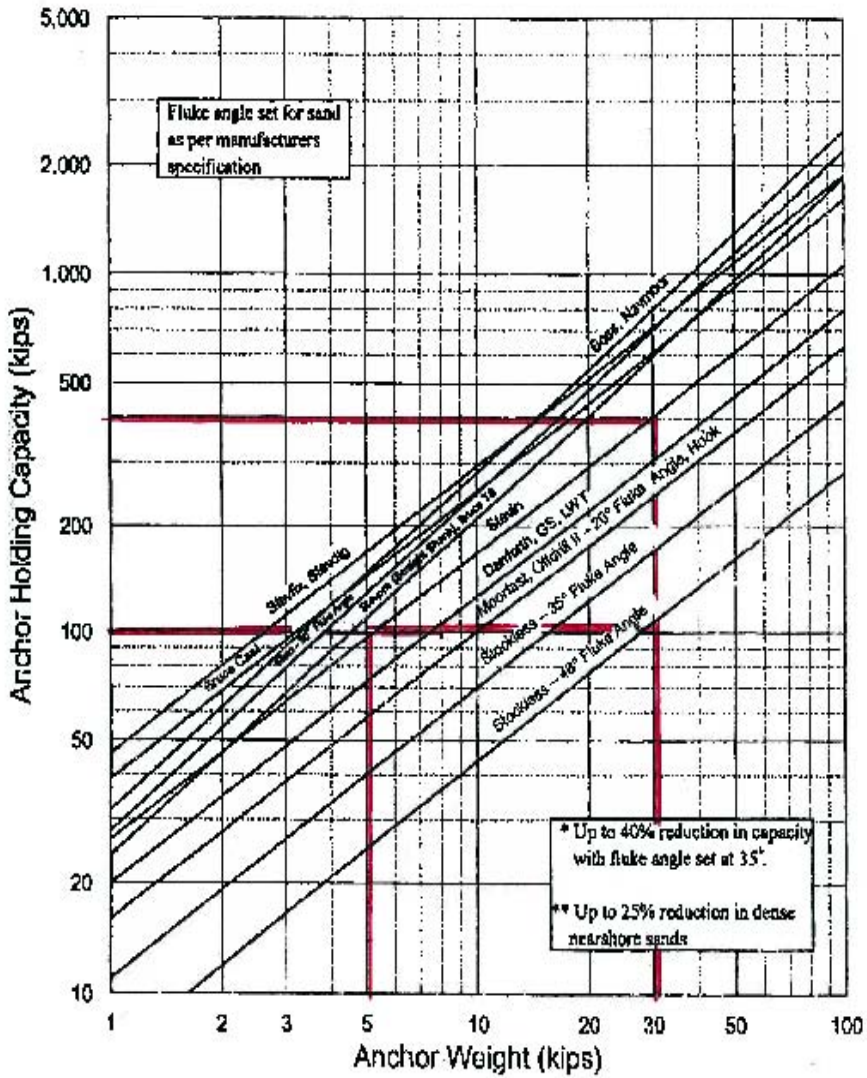
ANCHOR TYPES

- **FLIPPER**
- **STOCKLESS**

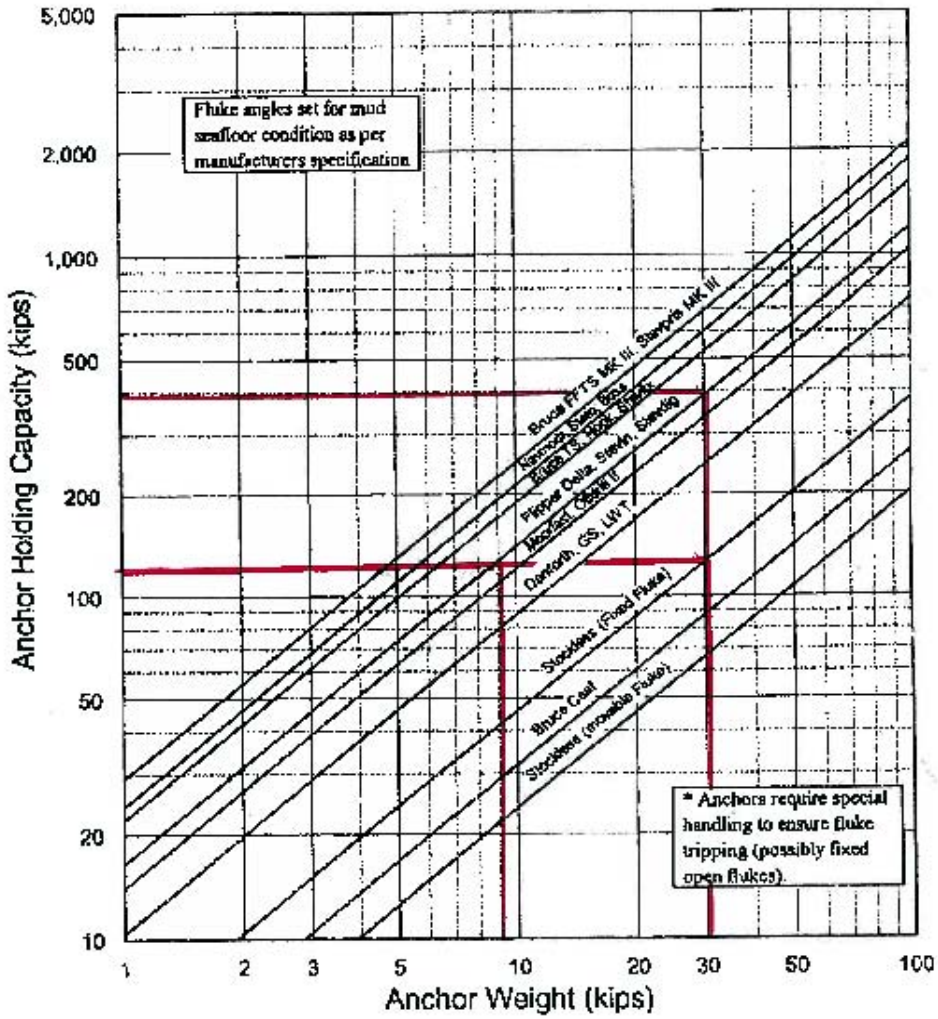
FLIPPER ANCHORS

STOCKLESS ANCHORS

ANCHOR HOLDING CAPACITY – SAND



ANCHOR HOLDING CAPACITY – CLAY



PENDANT WIRES

PENDANT BUOYS
TYPE: HORIZONTAL CAN

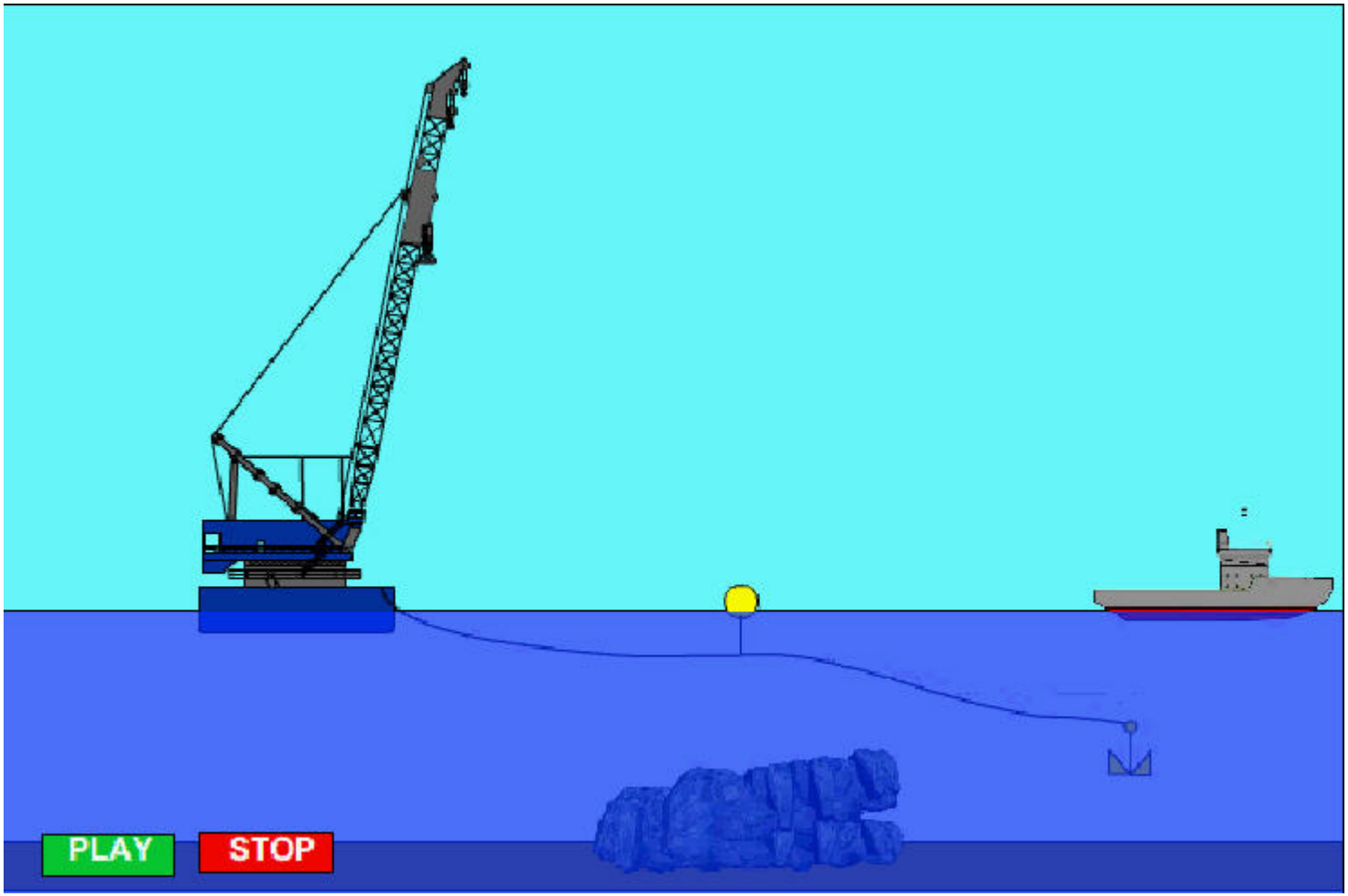
PENDANT BUOYS
TYPE: VERTICAL CAN

COMPLETE PENDANT BUOY, WIRE, ANCHOR

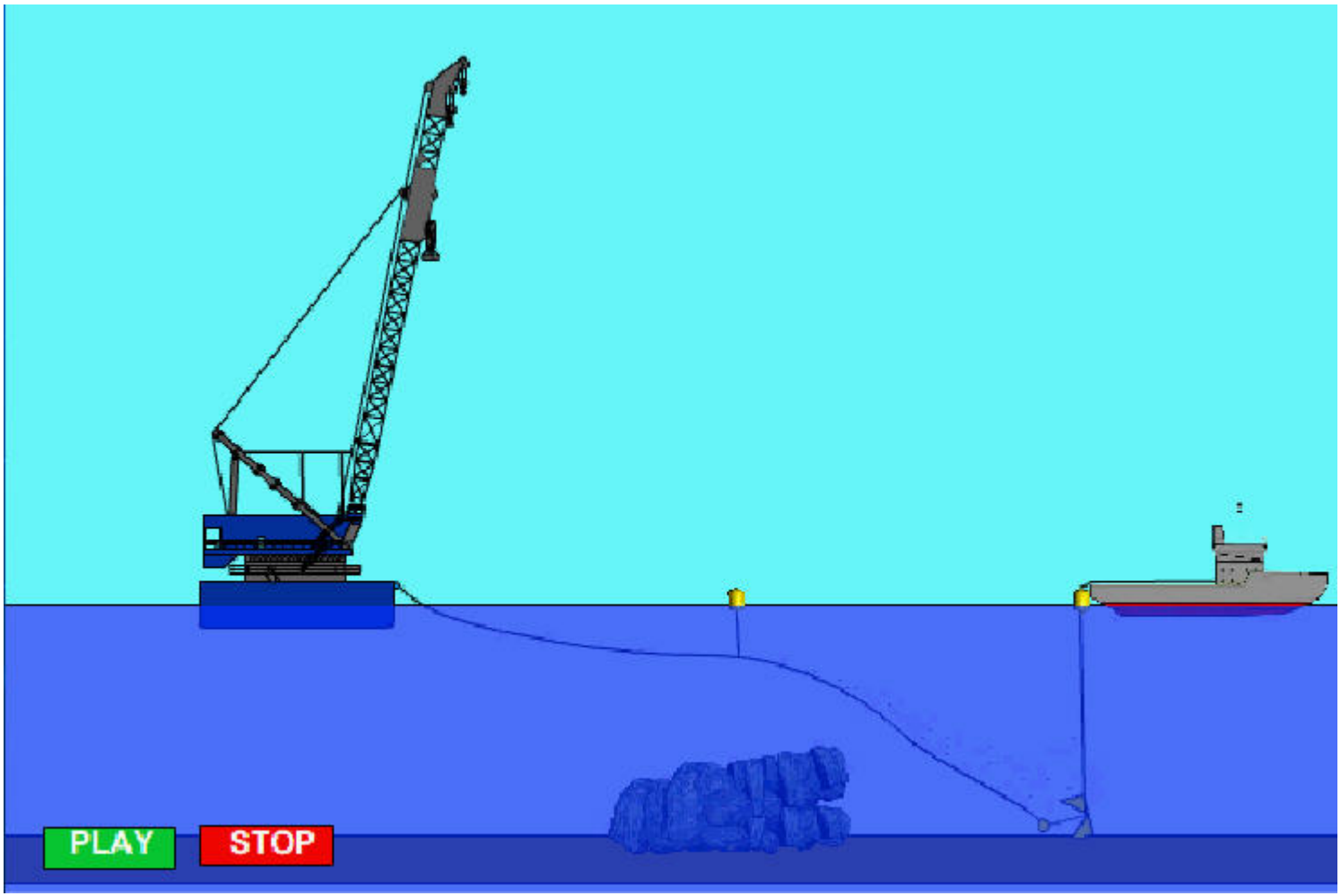
MIDLINE BUOYS

UNDER-RUNNING SHEAVE

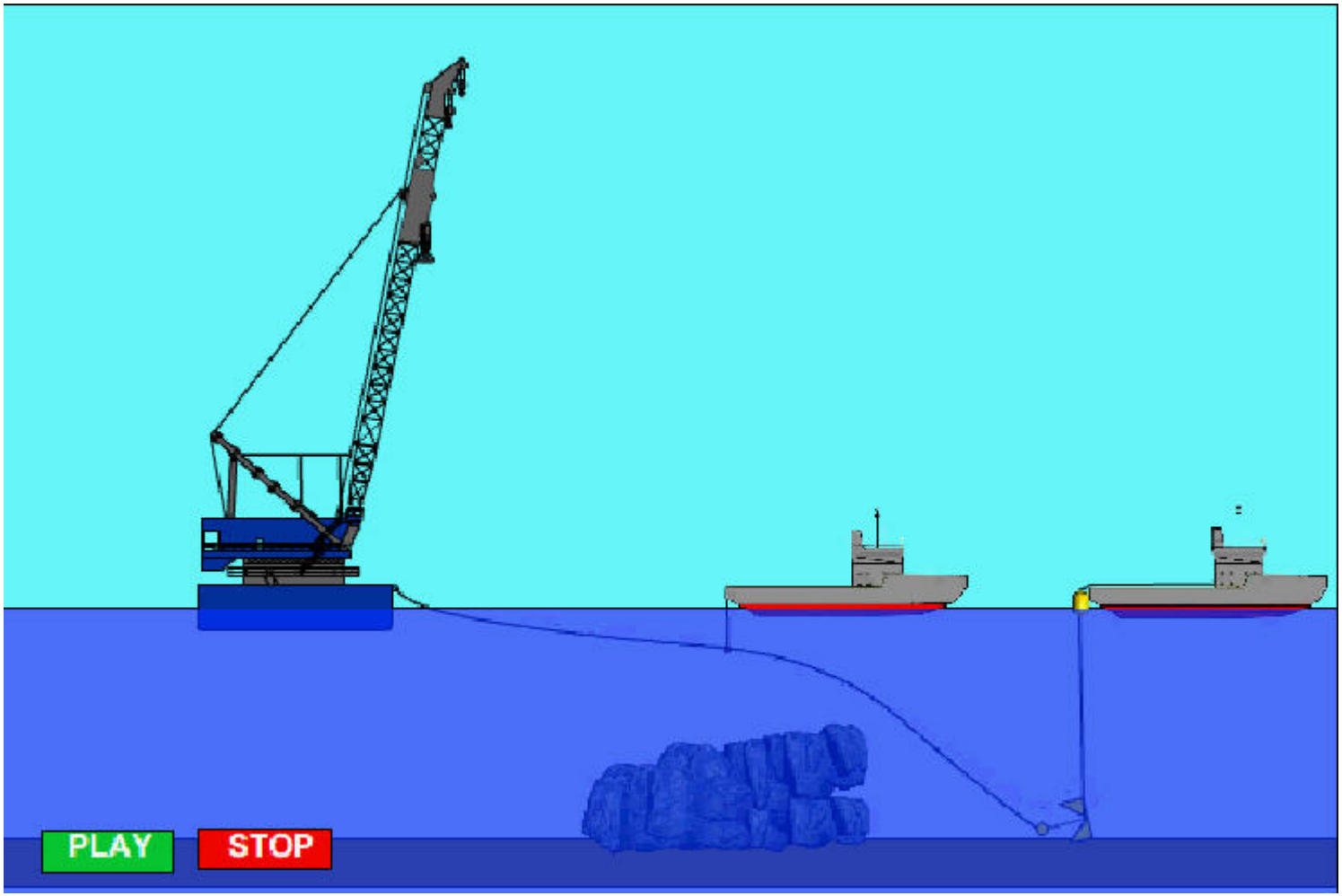
ANIMATED STANDARD BARGE ANCHORING PROCEDURE



ANIMATED AVOIDANCE OF BIOLOGICALLY SENSITIVE AREAS



ANIMATED AVOIDANCE OF BIOLOGICALLY SENSITIVE AREAS WITH 2 TUGS



CONTINGENCIES

- **ANCHOR WIRE PARTING**
- **PENDANT WIRE PARTING**

RECOMMENDATIONS AND CONCLUSION

- **PROPER PIPELINE ROUTE PLANNING**
- **ADHERENCE TO NTL 2004-G05**
- **CONSULT PIPELINE INSTALLATION CONTRACTORS**