



Black Rock Lock Controls Replacement and Addition of Interlocks



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Overview

- **Scope of Project**
- **Assumptions**
- **Constraints**
- **Requirements**
- **Other Considerations / Issues**
- **Potential Courses of Action (COA)**
- **Draft Recommendation**



Scope of the Project

- **Replace 25+ year old controls that are failing**
 - **Electrical and mechanical failures**
- **Add Interlocks per FRAGO 5**
 - **Currently no interlocks exist**
 - **Need to implement Key Task 3 of OPORD 2009-4**



Existing Stations



Temporary control box

Taped over controls



Assumptions

- **Design-Build Contracting**
 - **Previous good experience with DB**
 - **Limited time and available talent**
- **Can Phase the Project**
 - **Separable Phases**
 - **Fund across FY**
- **20-Year Design Life**



Constraints

- **Limited Funding**
 - **No more than \$230K available in FY11**
 - **Unknown funding in FY12 and beyond**
- **No adverse effect on commercial traffic**
 - **Perform all on-site work during winter closure (January- early March)**
 - OR**
 - **Provide temporary operating controls while new permanent controls are being installed**



Requirements

Round Up the
Usual
Suspects!



- **Controls, Indicators & Alarms**
 - Usual suspects
 - “Panic button”
 - Interlocks on/off
 - Confirmation of traffic light operation
 - Mismatch between cylinder commanded positions and actual positions
- **Add Interlocks**
- **Ease of Maintenance, Require COTS**



Other Considerations/Issues

- **How to phase the project**
 - **Control stations followed by interlocks**
- **What is the actual interlock requirement?**
 - **Does hard wiring require directional control valves (DCV) in the hydraulic lines that are controlled by relays?**
 - **Can relays interlock control circuits?**
 - **Can PLC type Safety Processor meet the intent of the requirements?**



Potential Courses of Action (COA)

- 1. Do Nothing**
- 2. New Control Stations, Hard Wired Interlocks in Hydraulic Lines**
- 3. New Control Stations, Hard Wired Interlocks in Control Circuits**
- 4. New Control Stations with PLC Controls and Interlocks in Safety Processor Software**
- 5. New Control Stations with Interlocks to be Added Later**
- 6. Repair Existing Control Stations and add Interlocks (Hard Wired or PLC Based)**



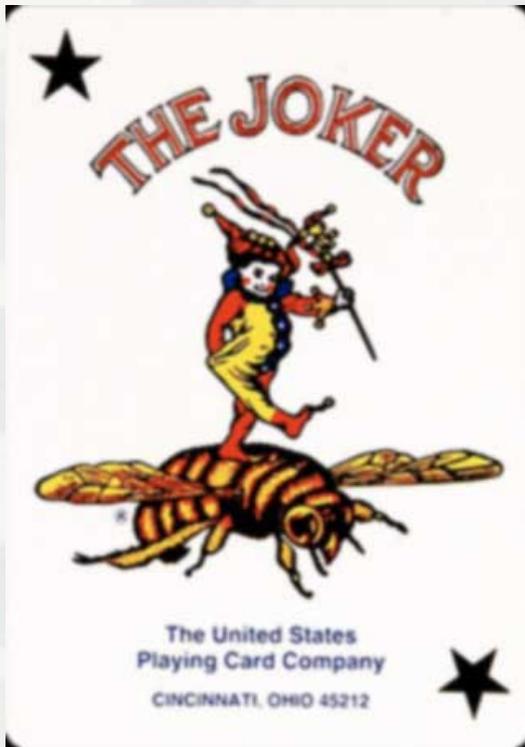
Draft Recommendation

- **Pursue use of PLC based interlocks**
 - **If LRD concurs then go with COA 4**
 - **If not, perform follow up detailed comparison between COAs 2 & 3**
- **Award base bid for new control stations with capability of addition of interlocks.**
- **Award option item of interlocks when funding is available.**



Question

If PLC based interlocks are not acceptable does it make sense to go with PLC controls with hard wired interlocks or would a completely relay based hard wired system make more sense?



An aerial photograph of a tropical island with several buildings, a dock with boats, and a clear blue ocean. The text "QUESTIONS & COMMENTS WILL BE GREATLY APPRECIATED" is overlaid in white on the top half of the image.

**QUESTIONS & COMMENTS WILL BE
GREATLY APPRECIATED**

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