



# Conventional Utilities

Tom Lackowski



# Agenda

- Meeting Goals
- Establish Interfaces
  - **BDS; Detectors; CFS GDE; CFS Detectors; CRYO; Others**
  - **What is included in the GDE/RDR**
    - Potable Water, Sanitary, Sumps, House Power; HVAC
- Reasonable Baseline Criteria
- Breakout Sessions
  - **Electrical** - Tom Lackowski
  - **Water Systems** – Steve Krstulovich
  - **HVAC**- Steve Krstulovich
  - Emil Huedem and Lee Hammond via Webex



# Goals for this Meeting

- Identify the point(s) of contact with whom we will develop reasonable requirements, in order for CF&S to produce a design and credible cost estimate.
- Identify what information we know and identify what information we do not know along with a plan, a responsible person, and timeline to determine the missing information.
- Discuss potential designs and their cost implications.
- Establish the magnitude, or at least a range, of the power and cooling loads.



## Additional Goals

- We intend to leave this meeting with the values for electrical and cooling loads.

Known

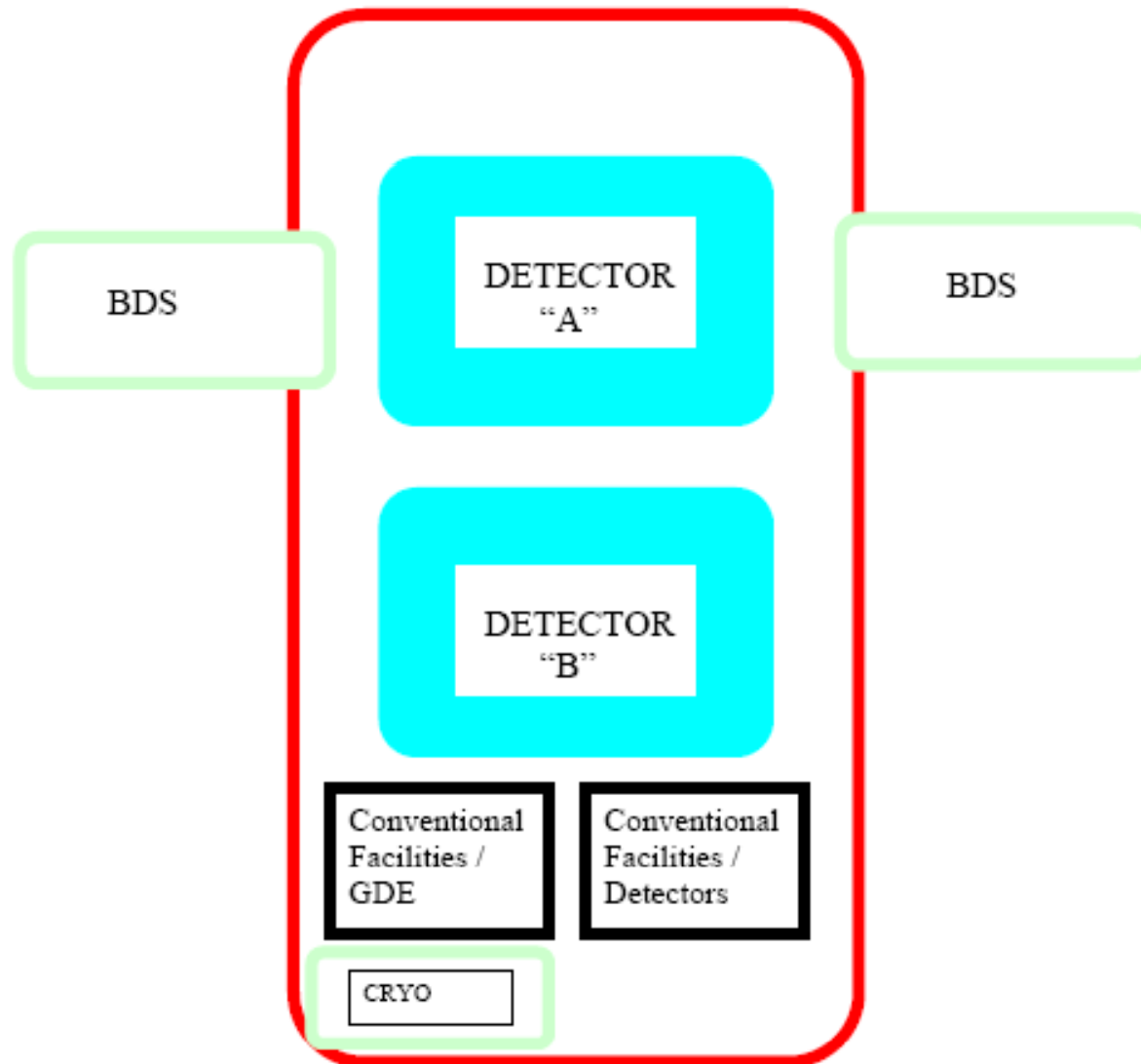
Educated  
Guess

**WAG**

Or Scaled

- Or at a minimum, a name, of who will provide the information.

# Interfaces





## Proposed Lines of Interface Between Detector and CF&S

- The detector cost accounts includes all systems that move with the detector; cooling, electrical, fire detection/protection.
- The detector cost accounts includes all connections to equipment not installed by CF&S.
  - **Distribution beyond panel boards for electrical**
  - **Distribution beyond pipe headers for water cooling systems**



# Convention Facilities / GDE

- Established the Site

- Roads, Walks, Fences
- High Voltage Electrical Substation with switchgear
- Communication Ducts
- Potable Water, Sanitary Sewer, Fire Hydrants

- Buildings

- Typical Industrial Building

- House Power- Lighting; Outlets, but no equipment power
- HVAC – Heating and Cooling for environment loads and people loads but no equipment loads
- Fire Detection and Fire Protection
- Toilet Rooms
- Cranes

- **Surface Buildings**

- Assembly Building @ 6971 sq. m
- Machine Shop @ 2090 sq. m
- Elec. Service Building @ 139 sq. m
- 2- Process Cooling Buildings @ 697 sq. m each
- 2- Ventilation Buildings @ 232 sq m each
- Survey Building @ 1190 sq m



# Convention Facilities / GDE

- Shafts

- Two 16 m shafts
- Elevators and/or Stairs
- HVAC Ductwork
- Cableways
- Sumps

- Detector Hall

- Hall 120 x 25 x 37 M of excavation
- Cranes
- Allotment for Steel Platforms (From CERN)
- Steel track Plates 20 x 80 x .05M
- Minimal Lighting
- Minimal HVAC





# Conventional Facilities / Detectors

## – Finish Out

- Walls, doors, flooring
- Control Rooms?
- Clean Rooms?
- Shield Door??
- Security and control structures

## – Detector Electrical

- User Power to Switchboards and Panel boards
- Complete Lighting
- Utility outlets, including welding outlets
- Grounding Systems
  - Standard Building Grounds
  - Isolated Grounds



## Conventional Facilities / Detectors

- Process Water
  - LCW
  - Chilled Water
- HVAC
  - Normal Ventilation
  - Purge Ventilation if Required
  - Air Cooling
  - Computer/Control Room Cooling
  - Humidity Control
  - Controls



## Pushing Back from the Get Go

- The baseline criteria should reflect an upper bound of what could be required.
- Value Management should start Now.
- There should be No Contingency in the requirements or criteria.
- Please help by questioning the requirements to achieve the best value, while maintaining the desired function.



Thank you for your Attention

Discussion