Civil and Siting Group

Global Group 4

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Summary Report

GG 4 Recommendations

The CFS Effort Should Remain a Distinct Group within the GDE Organization

We Would Like to Identify a Single Point of Contact within Each Other GDE Working Group for Two-Way Information Exchange

A Similar Matching Point of Contact will be Identified within the CFS Group for Each Other Working Group

The CFS Group will Take an Active Part in the Organization of Future Meetings to Ensure Dedicated Interaction Time for Working Group Points of Contact with Our Group

GG 4 Recommendations cont.

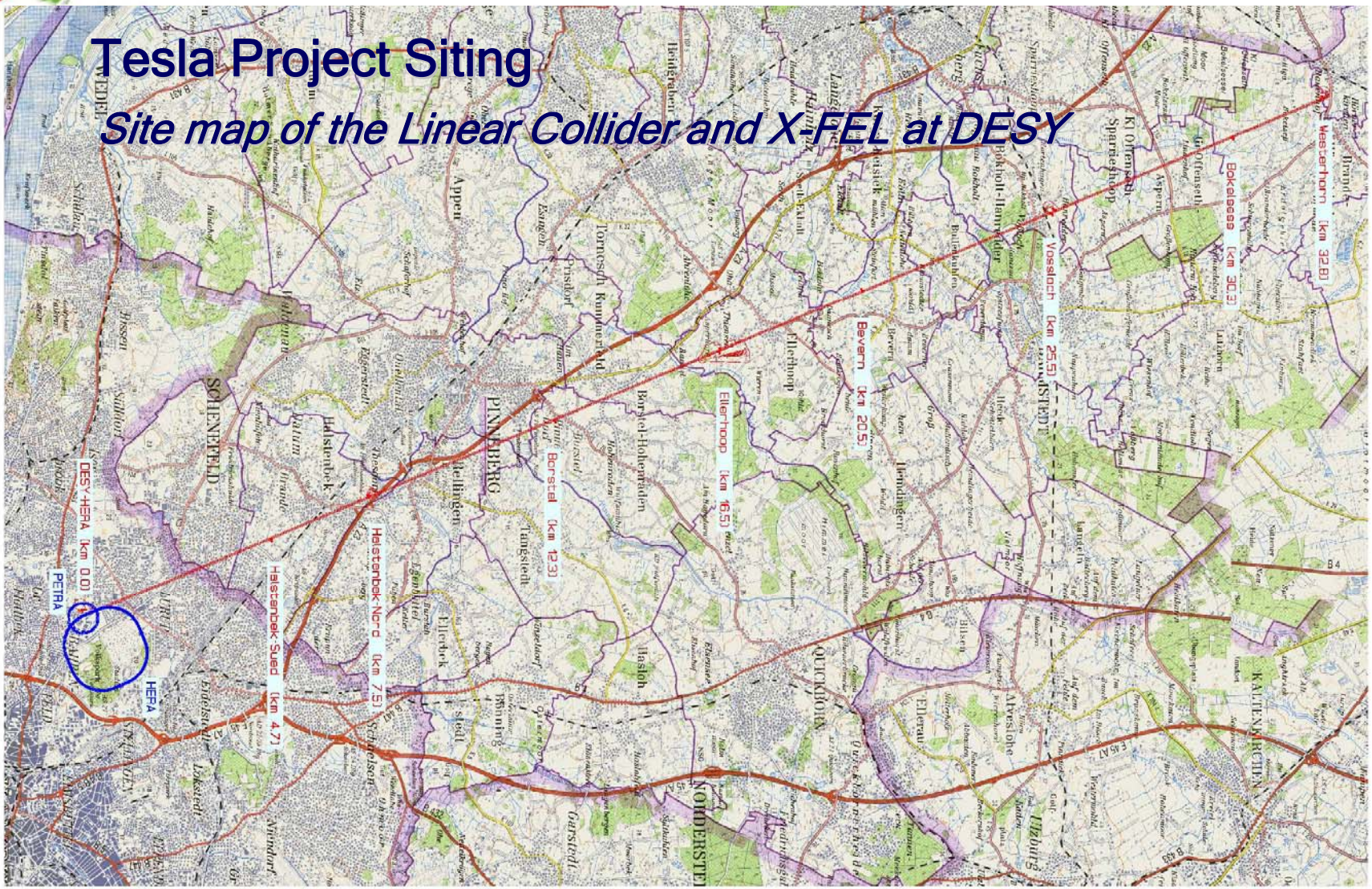
Our Group, with all Available Guidance, Will Generate a Proposal to the GDE for the Format of the Regional Sample Sites Information to be Included in the BCD and RDR

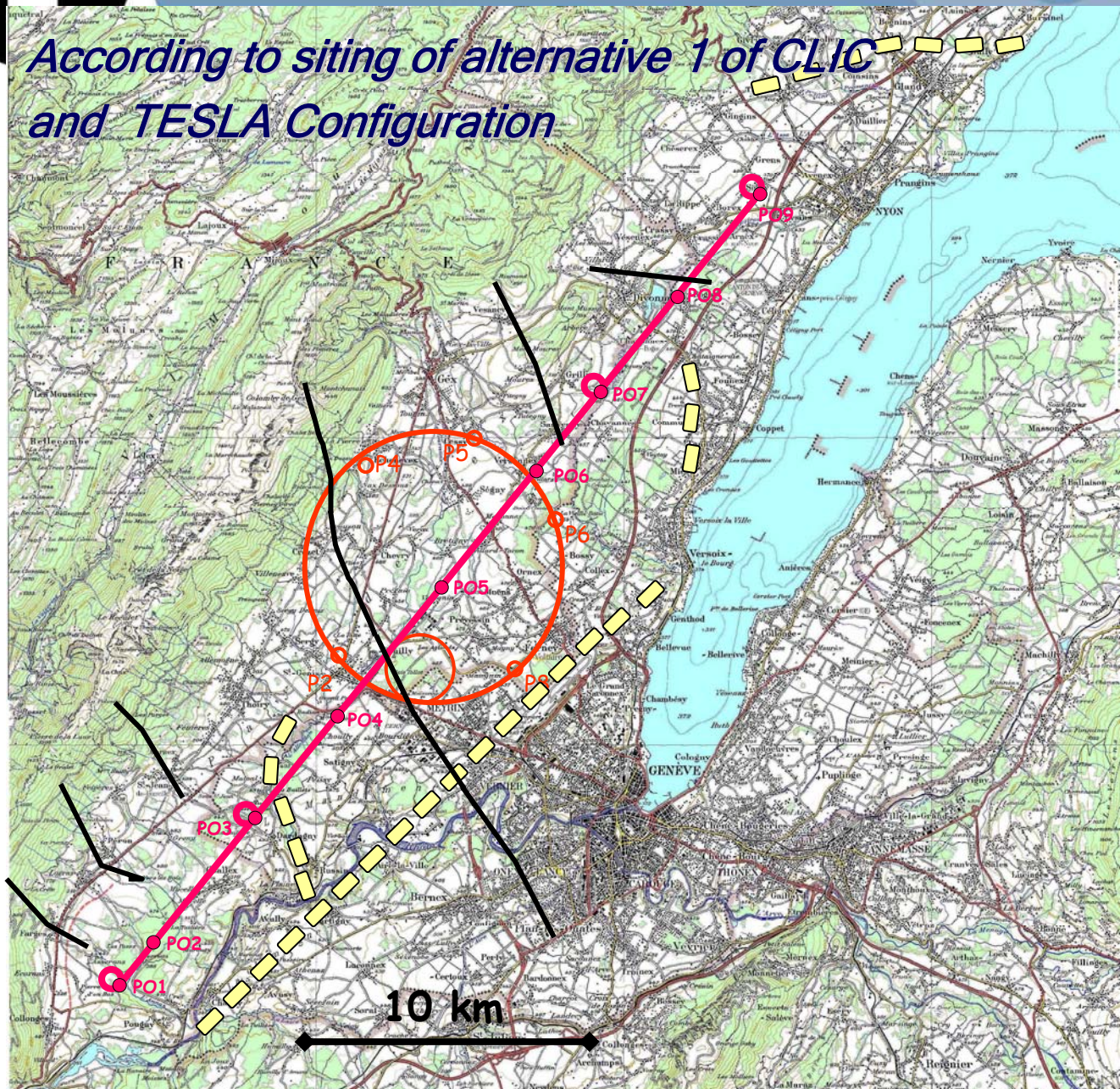
Our Group will Generate a Criteria Configuration List which will Serve as the CFS Group Tool for Configuration Management of the Conventional Facilities Design Effort

Our Group will Utilize the ILC Website for All Public Information Posting and as a Link to the EDMS for Site Sensitive and Work in Progress Information

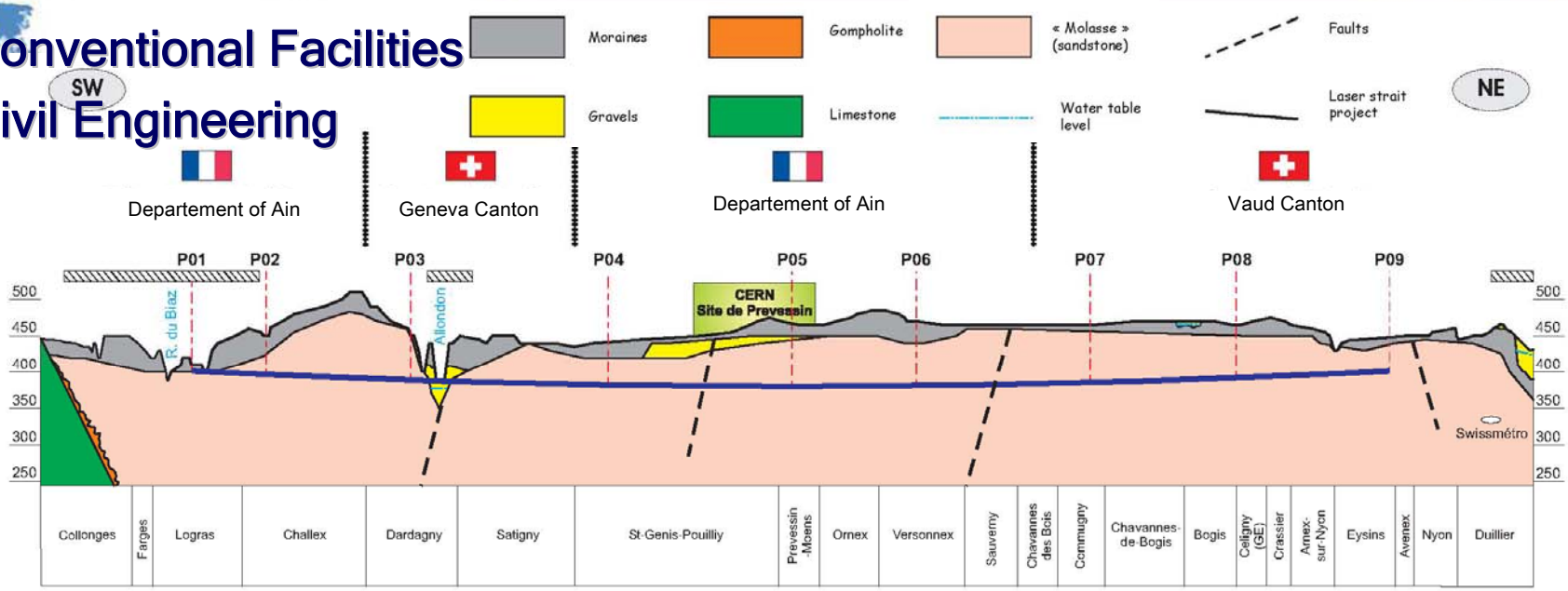
Tesla Project Siting

Site map of the Linear Collider and X-FEL at DESY




According to siting of alternative 1 of CLIC and TESLA Configuration
PO1
PO2
PO3
PO4
PO5
PO6
PO7
PO8
PO9
P2
P4
P5
P6
10 km
GENÈVE

Conventional Facilities
Civil Engineering



Longitudinal section, average depth 60 m

- *Average speed of TBMs in Molasse (sandstone) 20 m / day*
- *Use of 4 TBMs simultaneously, total duration of excavation : 22 months (hence approximately 42 months if 2 tunnels and 4 TBMs)*
- *Through Allondon depression (gravels) above water level*
- *Several shafts pass through water bearing moraines before reaching molasse rock*

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Conventional Facilities Site Considerations

This document is under Configuration Control and requires change control. Document CFAS-002

1 Site Impacts on Critical Science Parameters

- 1A **Configuration (Physical Dimensions and Layout)**
- .1 Usable length and width
- .2 Flexibility for Adjustment of Alignment
  - .a Adaptable to Laser Straight
  - .b Adaptable to Earth Curvature
- .3 Depth of Tunnel
- .4 Depth of Interaction Halls
- .5 Accessibility to Tunnels
- 1B **Performance (Vibration and Stability**
- .1 Natural Vibration/Noise Sources
  - .a Geologic Dynamic Properties
  - .b Seismic
  - .c Volcanoes
  - .d Rivers
  - .e Water Falls
- .2 Cultural Vibration/Noise Sources
  - .a Active Railway
  - .b Main Highway
  - .c Active Quarries
  - .d Other Major Man Made Activities

2 Scientific /Institutional Support Base

- 2A Proximity to a High Energy Physics Laboratory
- 2B Proximity to a Major Related Federal Research Laboratory
- 2C Proximity to Major Educational or Science Institution

3 Land Acquisition

- 3A Land Availability Along the Alignment
- 3B Estimate # of Land Ownership Along the Alignment
- 3C Land Cost
- 3D Future Development Impact
- 3E Usage of Surface
- 3F Within A Single Governing Body
- 3G Support of Government
- 3H National Parks
- 3I Sub-surface Easement Availability
- 3J Underground Land Ownership

4 Environmental Impacts

- 4A Surface Impact
- .1 Wetlands & other Waters of the State
- .2 Protected Lands
- .3 Endangered Species
- .4 Permitting Complexity

5 Construction Cost Impacts (cont.)

- 5C Climate
  - .1 Snowfall
  - .2 Average Ambient temperature
  - .3 Average underground temperature
  - .4 No of days rainfall
- 5D Environmental Restrictions
- 5E Accessibility
- 5F Site Utility Support & Installation
- 5G Proximity and Fees for Soil Borrow and Disposal Areas
- 5H Local Labor
  - .1 Construction Rate Index
  - .2 Skilled Labor
  - .3 Scientific and Professional
  - .4 Specialized
- 5I Type of Rock (Layers)
- 5J Estimated Advance Rate

6 Operational Cost Impacts

- 6A Cost of Power
- 6B Local Labor
  - .1 Construction Rate Index
- 6C Water for Cooling Systems
- 6D Cryogenic Requirements
- 6E Maintenance Requirements

7 Environment, Safety and Health Issues

- 7A Life Safety
  - .1 Egress Performance Measures
  - .2 Underground Hazard
    - .a Oxygen Deficiency Hazard Ventilation
    - .b Physical Hazards
    - .c Fire
  - 0 Underground Stored Energy Sources
- 7B Urgent Care and Local Response Support
- 7C Security
- 7D Presence of natural oil and/or natural gas (CH4)

8 Regional Infrastructure Support

- 8A Electrical Power (Availability and Reliability)
- 8B Cooling Water (Availability and Reliability)
- 8C Distance to a major seaport
- 8D Communities within commuting distance
- 8E Closeness to interstate highways and roads
- 8F Travel time to nearest major airport

Conclusions

- The CFS Group has Made a Good Start
- Regional Site Assessment Process
- Developed a Schedule for CFS Work through December, 2005
- Preliminary Work on Conventional Facilities Criteria Document
- Proposed Format for CFS Portion of BCD
- Proposal for Interaction with Other Working Groups
- Identified Issues that need Resolution (the sooner the better)

Outstanding Issues with Direct Impact on CFS Progress that will Require Further Discussion and Resolution with Other Working Groups

- 1 Tunnel vs 2 Tunnel
- Laser Straight vs Curved or Segmented
- Shape and Length of Damping Rings
- Shape and Configuration of Sources
- 1 vs 2 Interaction Regions

Outstanding Issues cont.

- Beam Dump Configuration
- Crossing Angle
- Overall Linac Length (Accelerating Gradient of RF Cavities)
- Access Shaft Spacing
- Possible Phasing of Construction to Match Available Funding