A Large Magnetized Liquid (70KT) Argon Detector For Proton Decay, Neutrino Factory And Solar Neutrino For The WIPP Site

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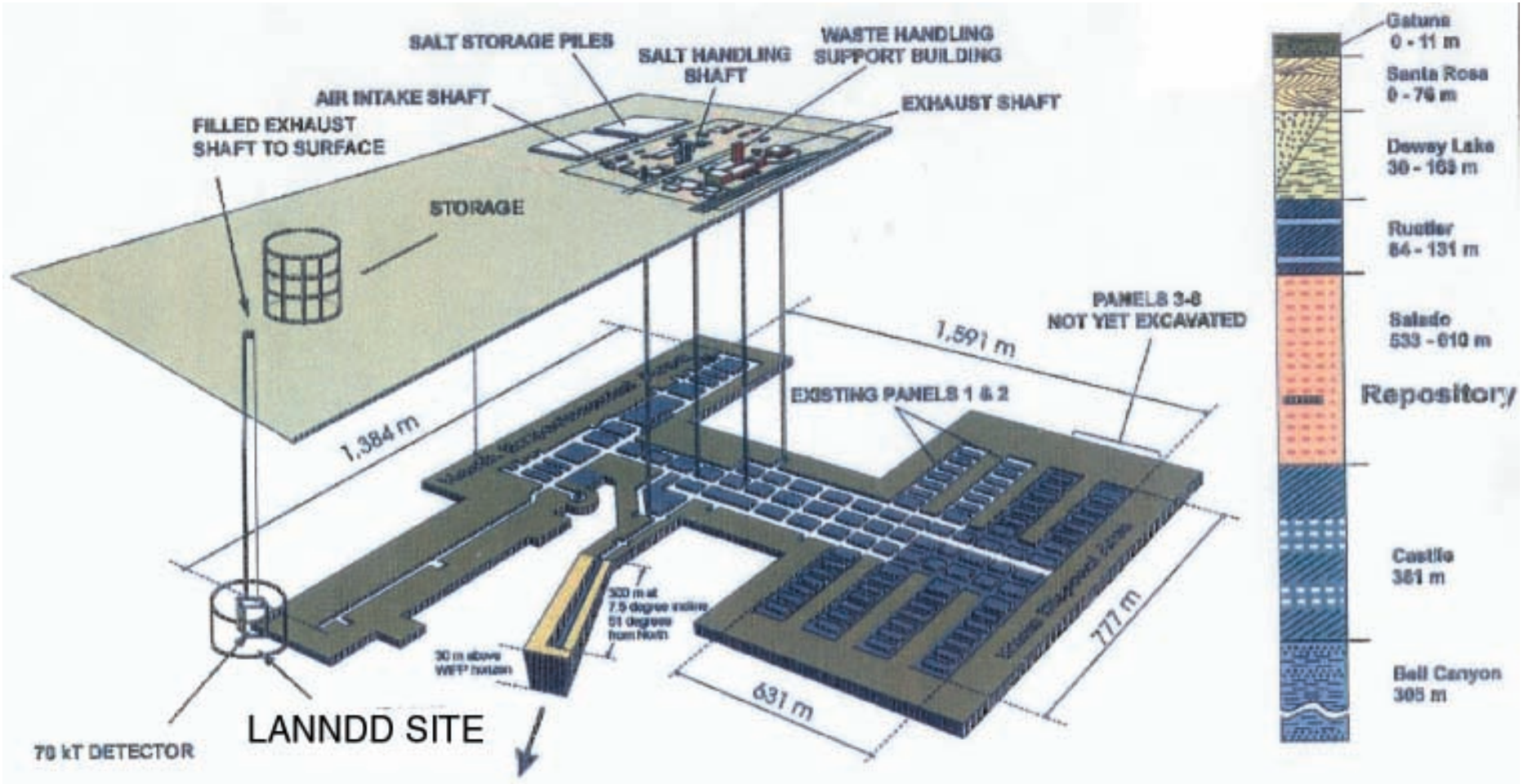
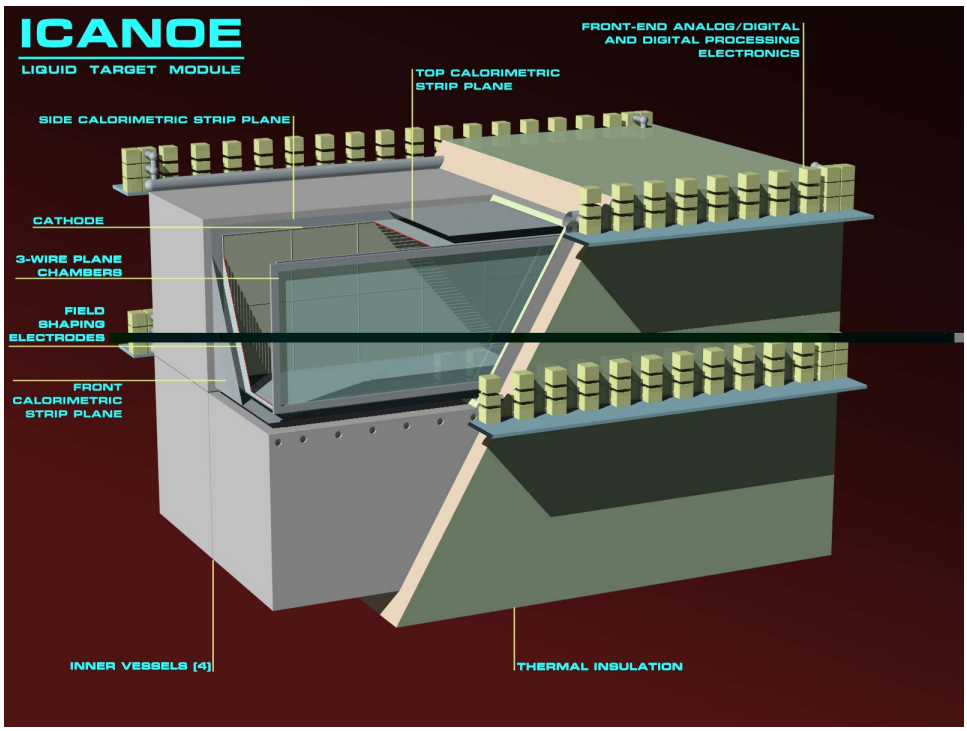
- John Learned - Hawaii
- Kirk McDonald – Princeton
- Franco Sergiampietri - UCLA / Pisa

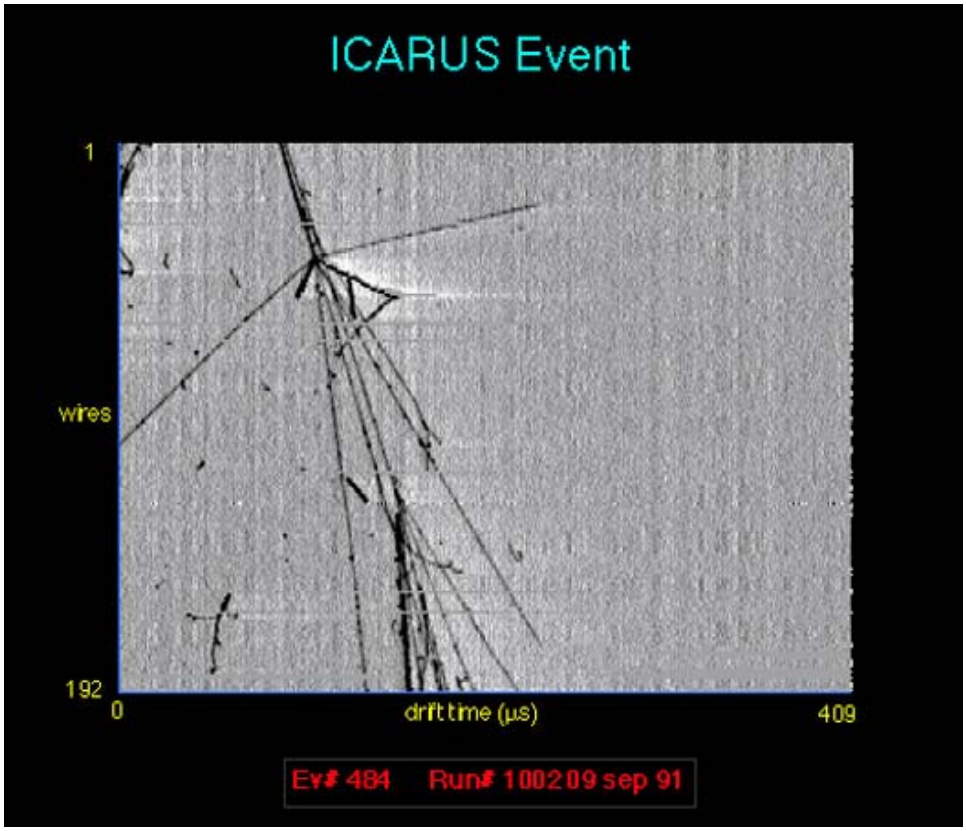
- This detector can search for proton decay to 10^{35} years, will have thousands of solar neutrino events and atmospheric neutrino events. A small detector prototype is being considered.

A Long Baseline Neutrino Experiment at the WIPP Site


SALT STORAGE PILES
SALT HANDLING SHAFT
WASTE HANDLING SUPPORT BUILDING
AIR INTAKE SHAFT
EXHAUST SHAFT
FILLED EXHAUST SHAFT TO SURFACE
STORAGE
PANELS 3-8 NOT YET EXCAVATED
1,591 m
EXISTING PANELS 1 & 2
1,384 m
777 m
631 m
70 kT DETECTOR
LANNDD SITE
Gatuna 0 - 11 m
Santa Rosa 0 - 76 m
Dewey Lake 30 - 163 m
Rustler 84 - 131 m
Salado 533 - 610 m
Repository
Castile 381 m
Bell Canyon 395 m

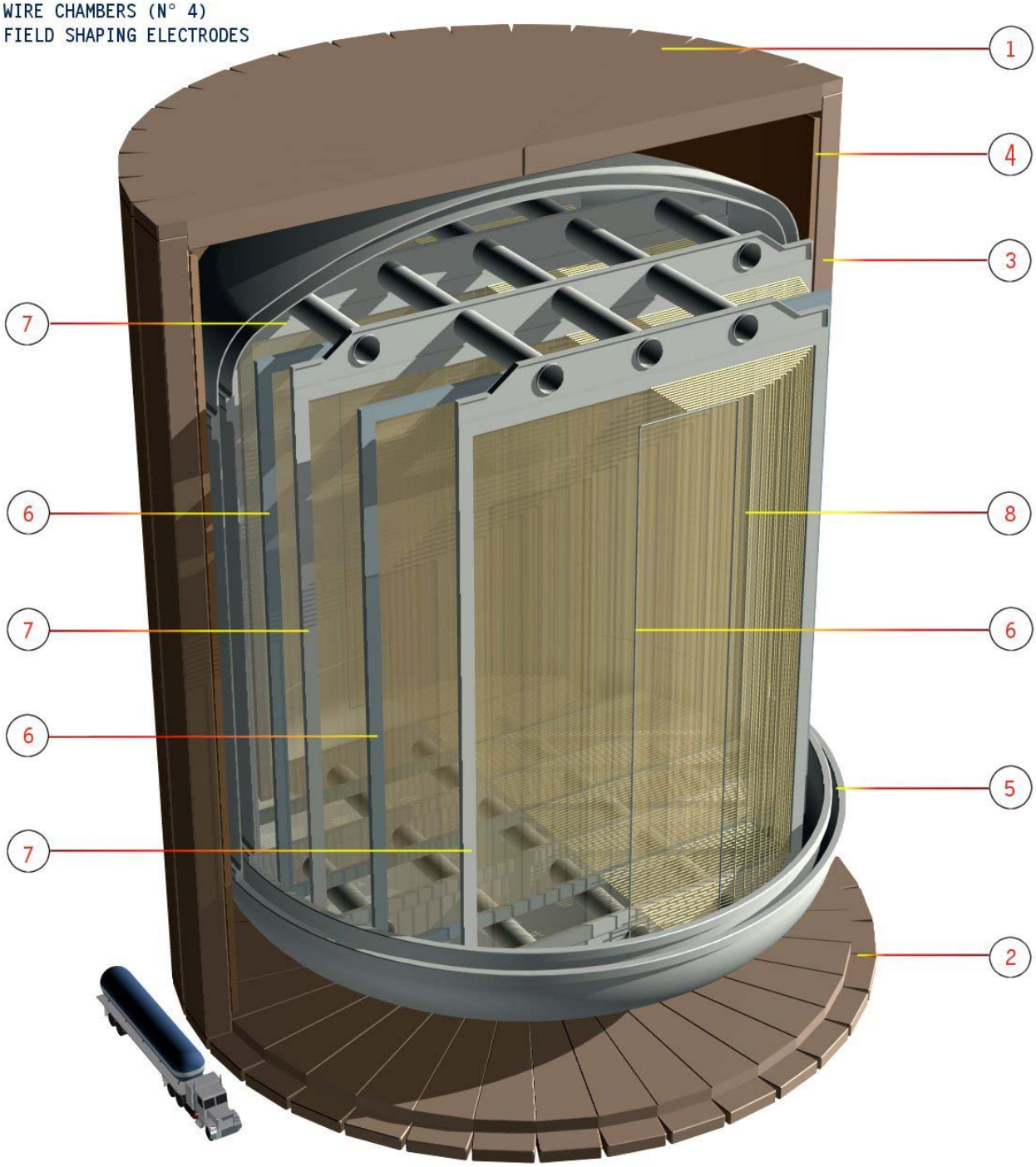
Liquid Argon TPC Pioneered by ICANOE





ICANOE has no magnetic field.

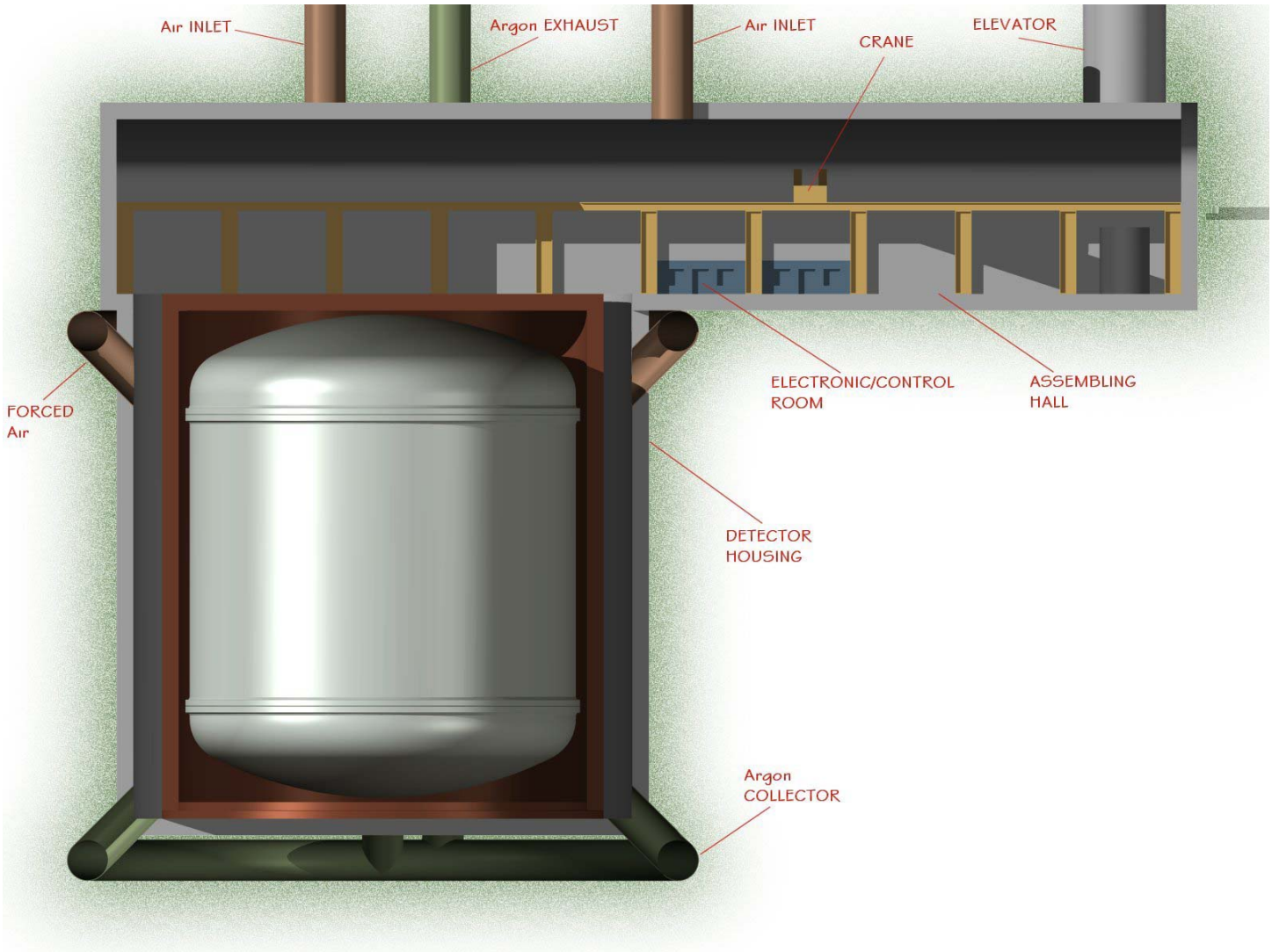
1- TOP END CAP IRON YOKE
2- BOTTOM END CAP IRON YOKE
3- BARREL IRON RETURN YOKE
4- COIL
5- CRYOSTAT
6- CATHODES (N° 5)
7- WIRE CHAMBERS (N° 4)
8- FIELD SHAPING ELECTRODES

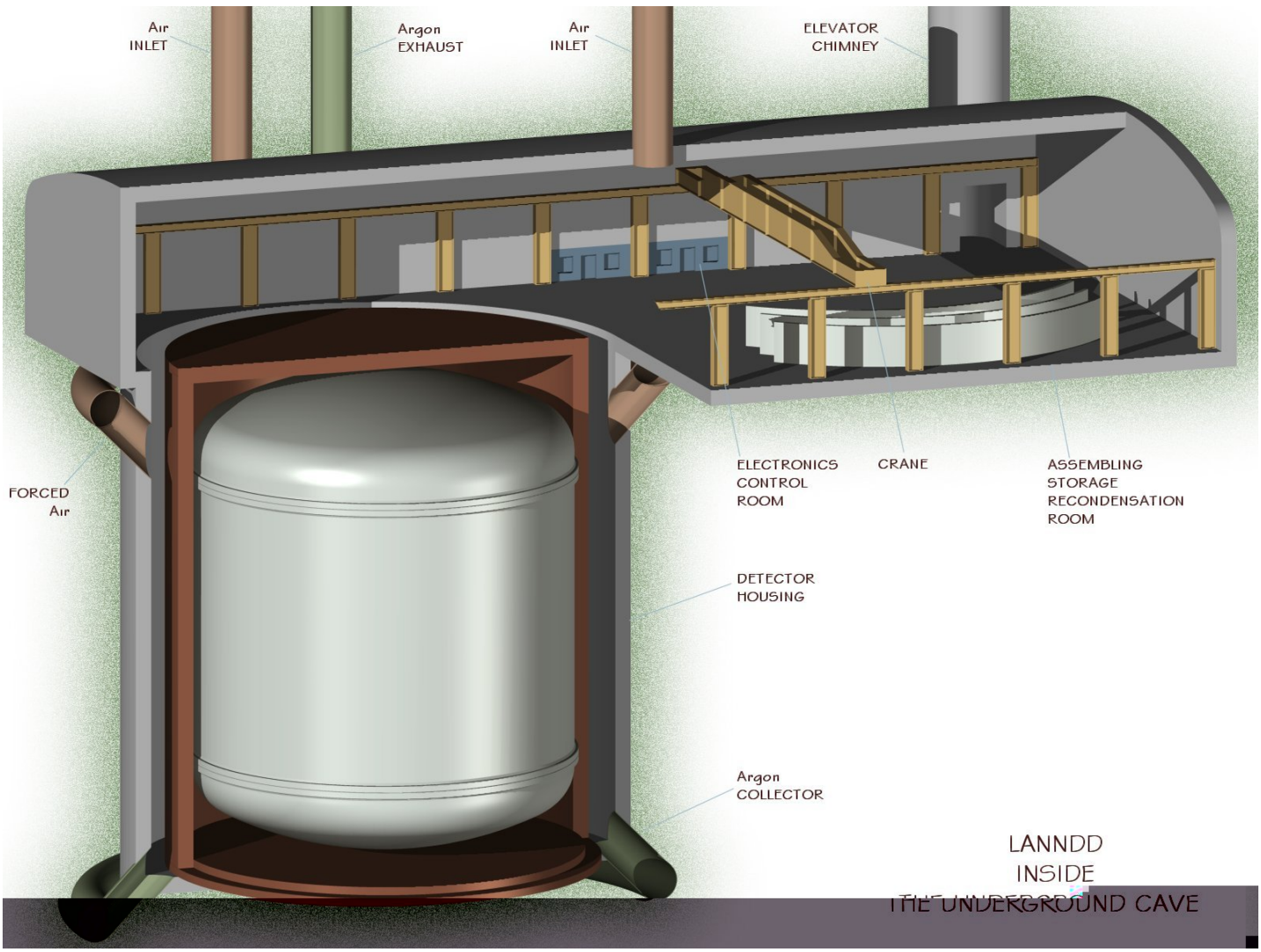


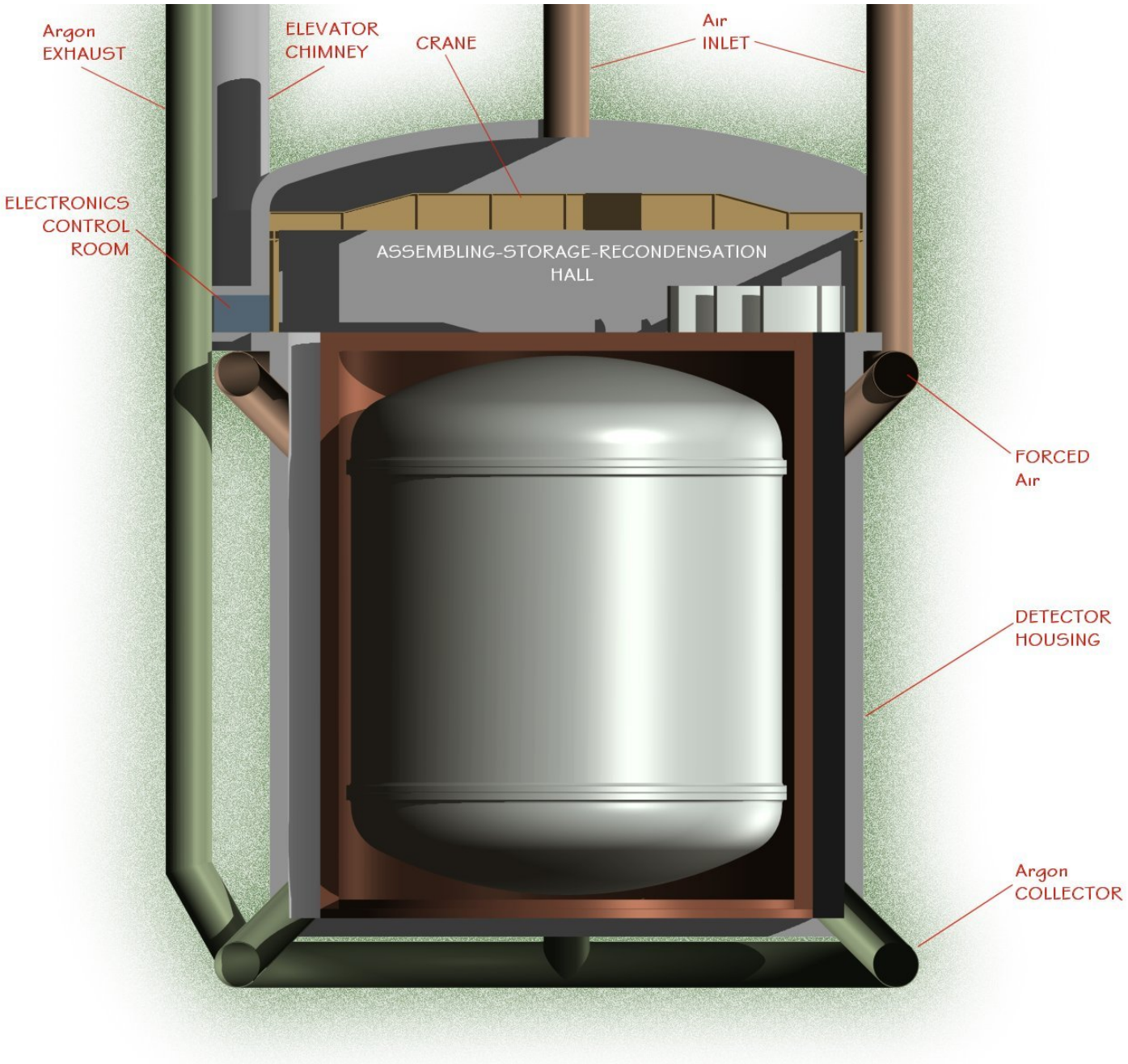
LANNDD

Liquid Argon Neutrino and Nucleon Decay Detector

F. Sergiampietri-August 2000


Air INLET
Argon EXHAUST
Air INLET
CRANE
ELEVATOR
FORCED
Air
ELECTRONIC/CONTROL
ROOM
ASSEMBLING
HALL
DETECTOR
HOUSING
Argon
COLLECTOR


Air
INLET
Argon
EXHAUST
Air
INLET
ELEVATOR
CHIMNEY
FORCED
Air
ELECTRONICS
CONTROL
ROOM
CRANE
ASSEMBLING
STORAGE
RECONDENSATION
ROOM
DETECTOR
HOUSING
Argon
COLLECTOR
LANNDD
INSIDE
THE UNDERGROUND CAVE


Argon
EXHAUST
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CHIMNEY
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Air
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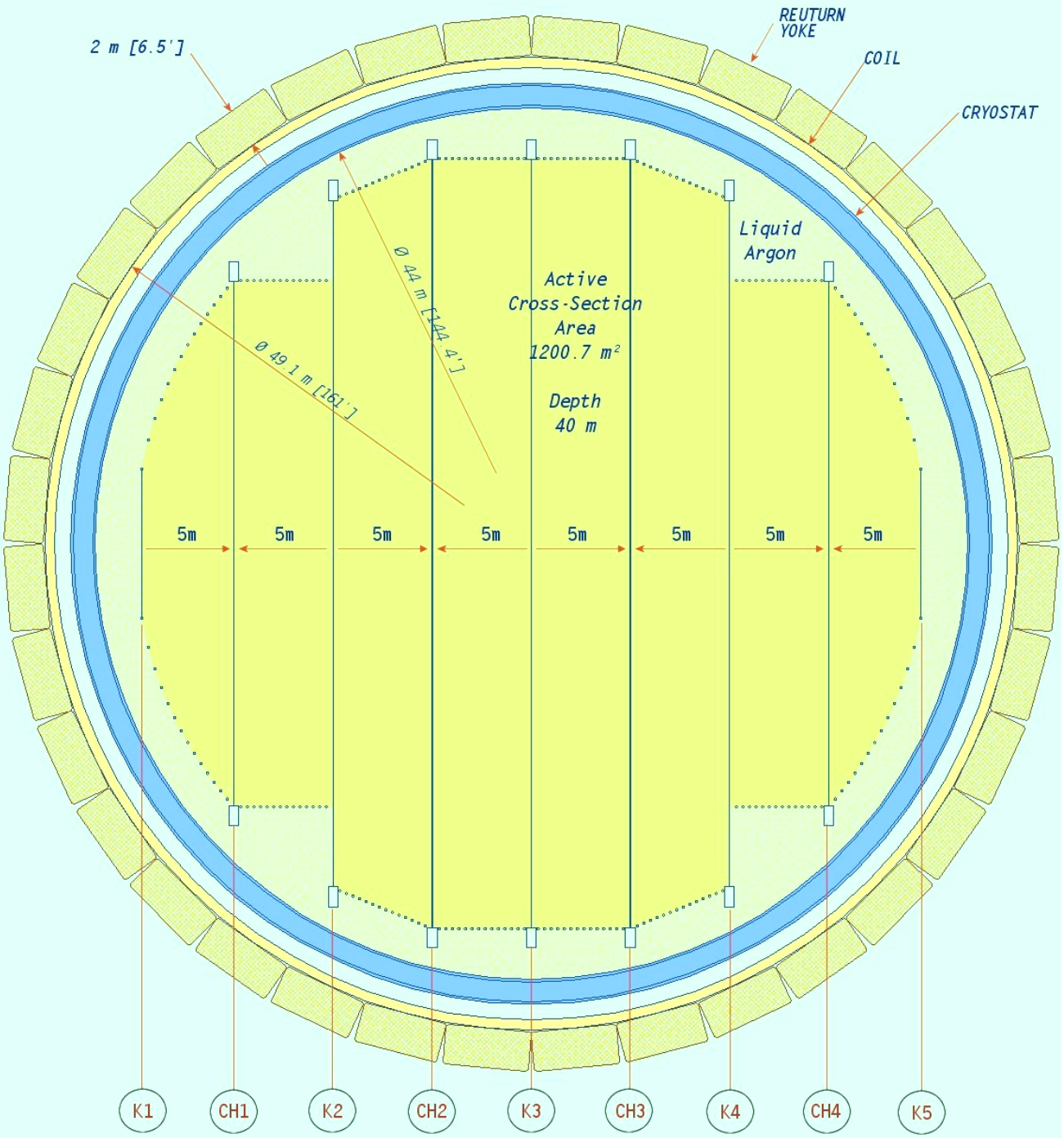
ASSEMBLING-STORAGE-RECONDENSATION
HALL
FORCED
Air
DETECTOR
HOUSING
Argon
COLLECTOR

N°OF WIRE CHAMBERS		4
WIRE CHAMBER CH1,CH4		W=26.46m H=40m
CH2,CH3		W=38.73m H=40m
READOUT PLANES/CHAMBER		4 [2 at +45°, 2 at -45°]
SCREEN-GRID PLANES/CHAMBER		3
N°OF WIRES-CHANNELS/PLANE	CH1,CH4	8x15'664=125'312
	CH2,CH3	8x18'557=148'455
TOTAL N°OF WIRES-CHANNELS		273'767

ACTIVE VOLUME	48'000 m³
ACTIVE MASS	67 kT
N°OF CATHODE PLANES	5
MAXIMUM DRIFT	5 m
MAXIMUM HIGH VOLTAGE	250 kV
REQUIRED PURITY LIFETIME	15÷20 ms



LANNDD

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Horizontal Cross-Section

F. Sergiampietri-August 2000