

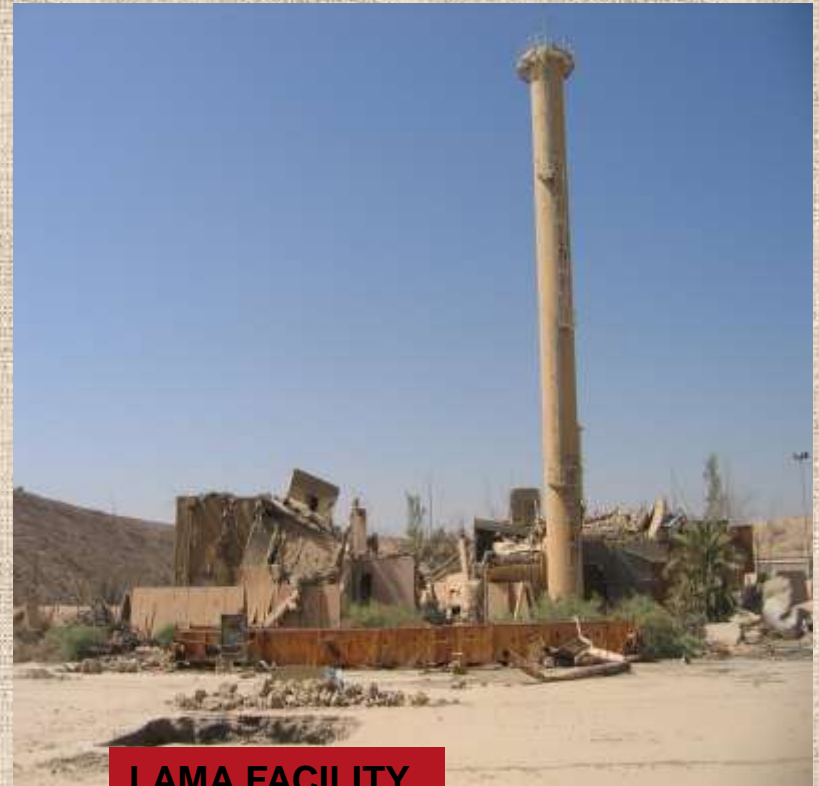
**PRESENTATION ON DECOMMISSIONING PROGRAMME
IN IRAQ FOR WORKSHOP ON REVIEW OF A
DECOMMISSIONING PLAN/ BUCHAREST**

4-8JULY 2011

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IRT-5000



LAMA FACILITY

General Information

- * **All the nuclear sites and facilities of Iraq's former nuclear Programme have been destroyed causing uncontrolled radiological contamination.**
- * **Many of these nuclear sites suffered substantial physical damage during Gulf wars and have been subjected to subsequent looting.**
- * **All these sites and facilities require decommissioning to protect the environment, public and worker.**
- * **It is not possible to decommission all sites and facilities at the same time due to many limiting factors so prioritization methodology and system are required.**

Nuclear Sites and Facilities to be Decommissioned in Iraq

There are 10 Nuclear sites distributed all over the country with AL-Tuwaitha, near Baghdad being the site containing the greatest number of facilities and radwaste storage .



Prioritization of Facilities and Sites to be Decommissioned in Iraq

It is not possible to decommissioning of all nuclear sites and facilities at the same time due to the following:-

- * Lack of decommissioning experience and decommissioning technology**
- * Lack of availability of human resource**
- * Security situation in Iraq**
- * Availability of skills**
- * Cost effectiveness**

Al -Tuwaitha site

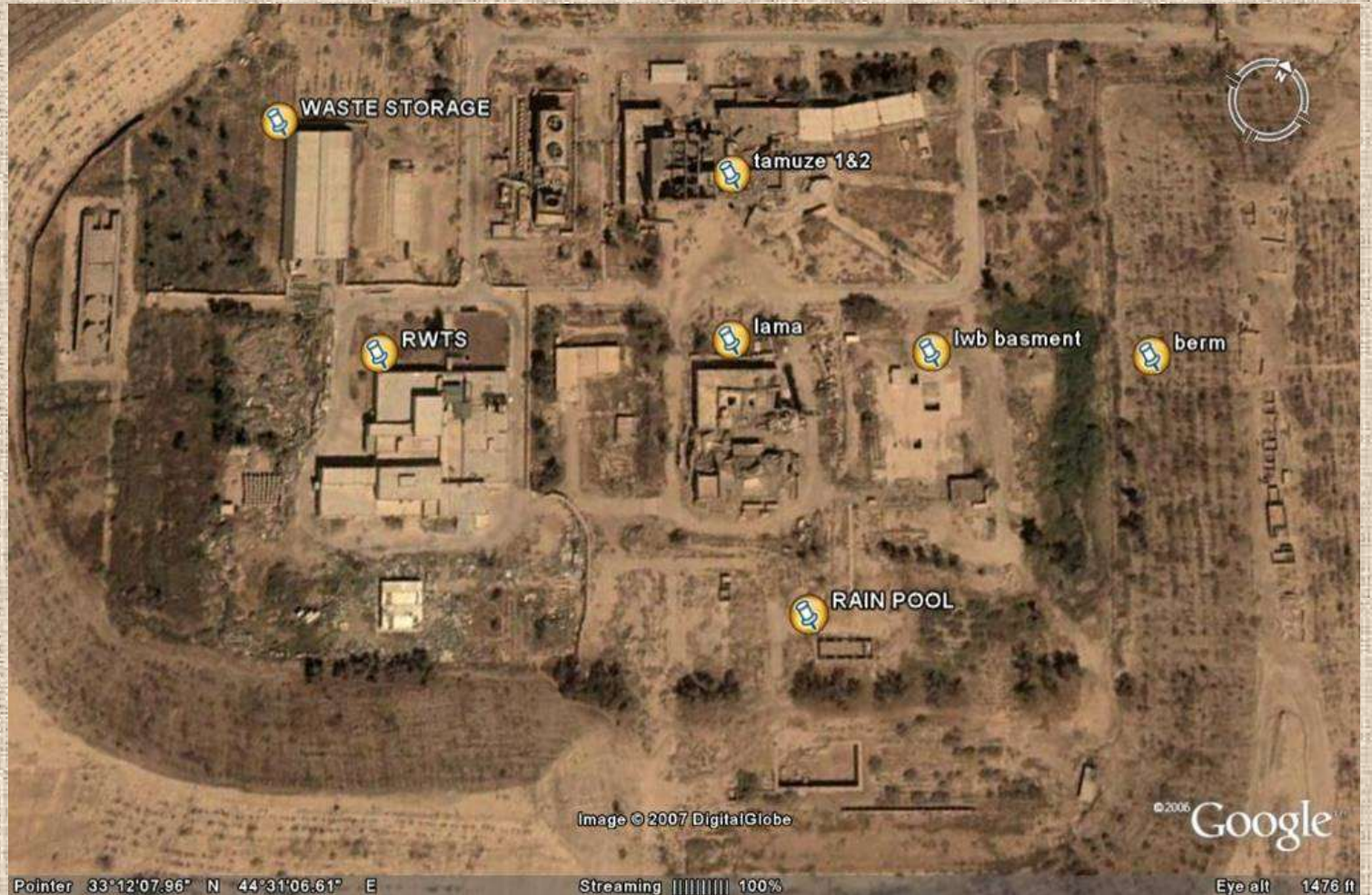
This is the main and oldest site it contain 18 Facility and radwaste storage these are:-

IRT – 5000 reactor, Tammuz-2 reactor , Radiochemistry lab. Radioisotope No.1 , Radioisotope No.2 , LAMA hot Laboratory, Radioactive waste treatment station , solid waste storage silo, RWTS waste store, Contaminated ground area surrounding RWTS, Russian silo , Uranium metal production , Fuel Fabrication, Other Italian complex , Technology hall , Po210 production, out-1 Burial , scrapyards Burial sites.

Tuwaitha Site



French project



DECOMMISSIONING OF LAMA FACILITY

- LAMA (Active metallurgy Testing Laboratory) is a nuclear facility supplied by the French as one of the 17 July project) which in term is a part of Tuwaitha nuclear site. The LAMA laboratory was built on two floors and cover a ground surface area of 1150 m². The ground floor includes very high activity laboratory consist of three concrete cells (the thickness of the walls are suitable for activity up to 100,000 curies of 1 Mev).
- The building was heavily attacked and damaged by bomb and rockets during the war. It still exists as a damaged building .The building surrounded by area about 62000 square meter containing rubble piles, scrap and mixed rubble.

DECOMMISSIONING OF LAMA FACILITY (CONT..)

Scope:

The activities necessary to safely remove the potentially contaminated rubble and scrap from the LAMA Site. This will be the first Stage of LAMA decommissioning, to be followed by three other stages:

Stage (1) – Removal of all contaminated and uncontaminated rubble and scrap within the LAMA Site, in addition to all abandoned site services. The area around the LAMA Facility is about 63,000 m². The work includes surveying for unexploded ordinance (UXO), scoping the area, segregation of rubble and metallic scrap, characterization, and relocation of radioactive waste and clean scrap.

One year Started 2008 **completed**

Stage(2) -Dismantling the unsafe structures and decommissioning the building except for the three concrete hot cells, the basement and the chimney.

One year started 2009 **completed**

Stage(3) - Dismantling the three concrete hot cells and the chimney.

Stage (4): Dismantling the basement and its equipment.

Two years stated 2010 for stages 3&4

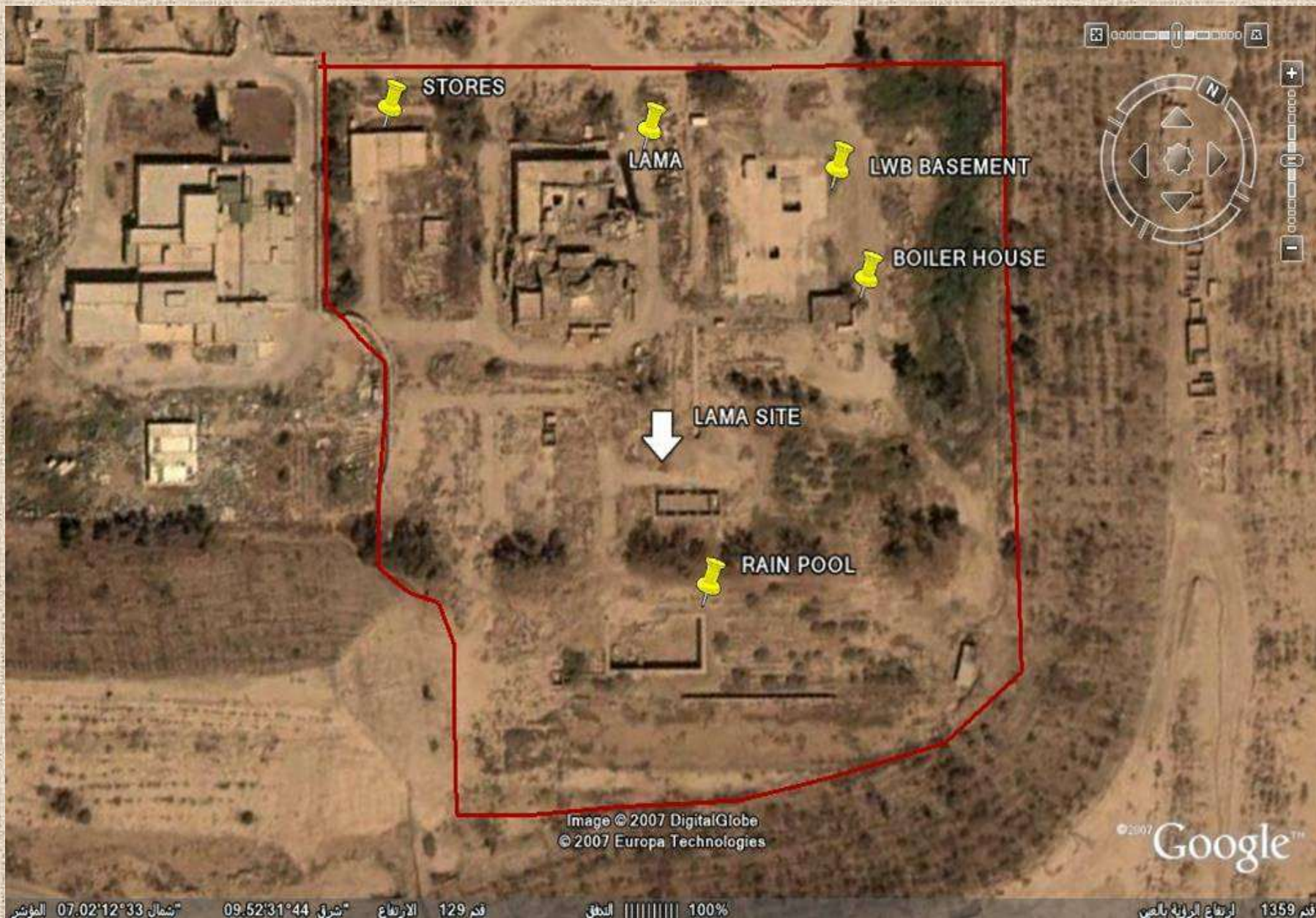


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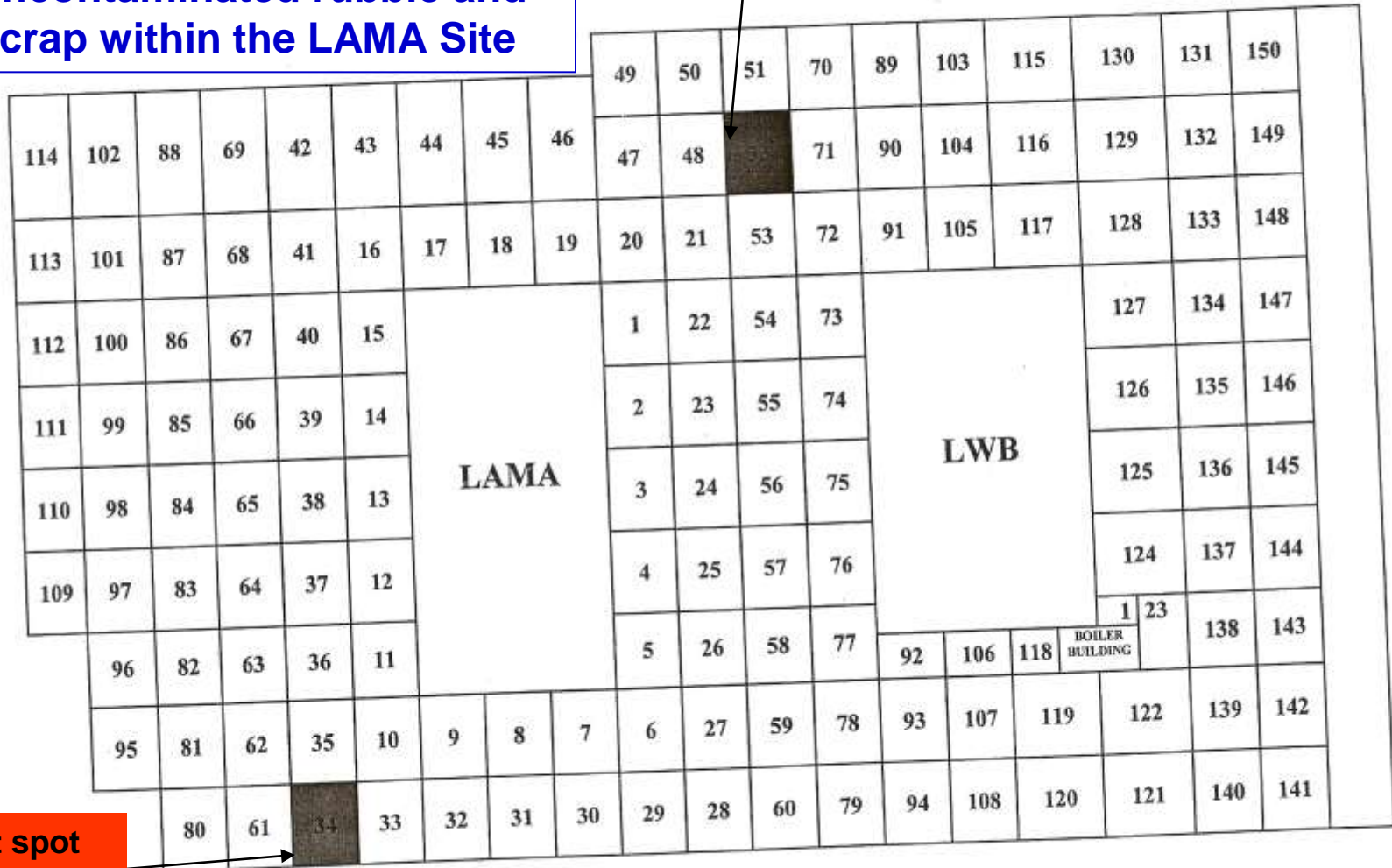
شمال 07.02'12°33' الموضحة | شرق 09.52'31°44' | الارتفاع 129 قدم | النطاق 100% | ارتفاع الرؤية بالعين 1359 قدم



Lama building before 2008

Stage/1 Removal of all contaminated and uncontaminated rubble and scrap within the LAMA Site

Hot spot



Hot spot

GRID(10x10m) FOR SURROUNDING AREA

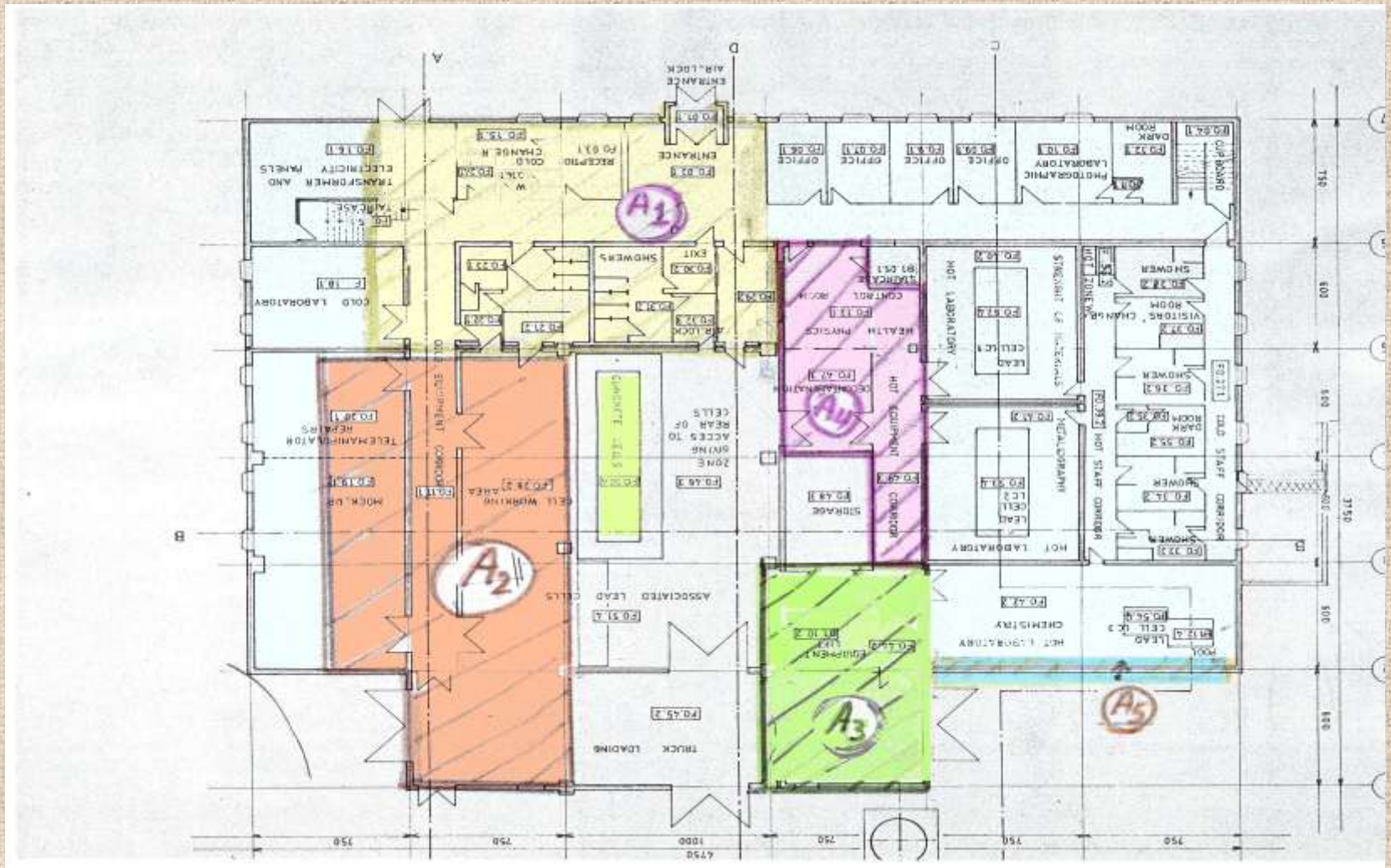


Surrounding area scoping



LAMA BUILDING AFTER CLEANING THE SURROUNDING AREA

Dismantling activity / stage 2 : Dismantling executed for five areas which contain the unsafe structure





different views of LAMA building



SCOPING LAB. ROOMS



Scoping the unsafe structure



HOT SPOT



Dismantling activities





Chimney

THREE HOT CELLS

THE BASEMENT

LAMA AFTER UNSAFE STRUTURE REMOVAL STAGE 2



Clean metallic scrape area



Clean rubble & concrete area



Chimney removal

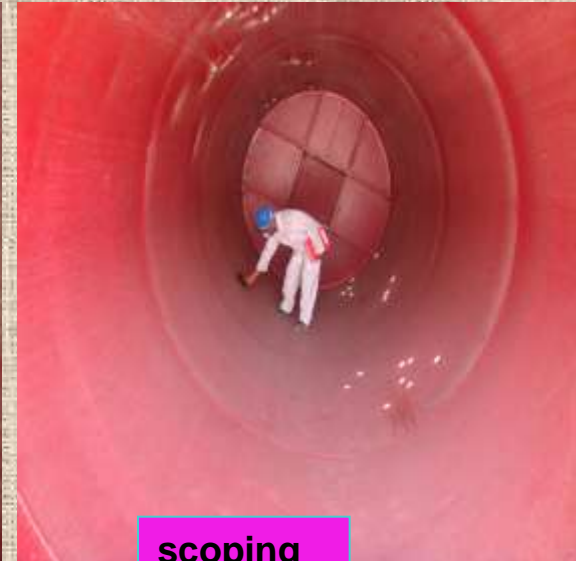
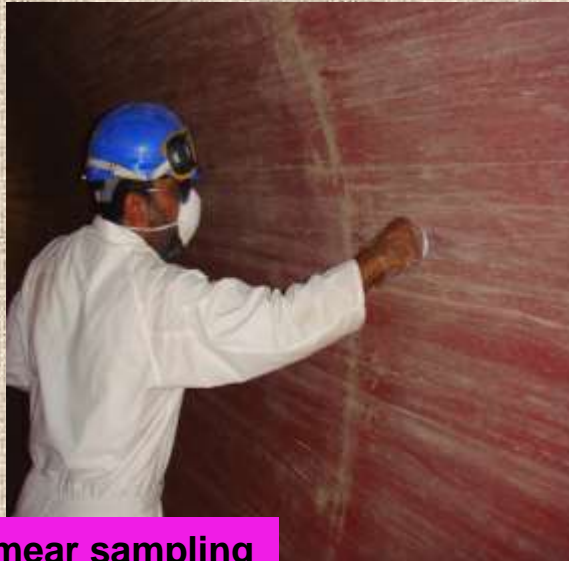


Cutting after characterization

Characterization activity



Smear sampling



scoping



Regulatory body visit



Radio active source

Hot cells removal (stage 3)

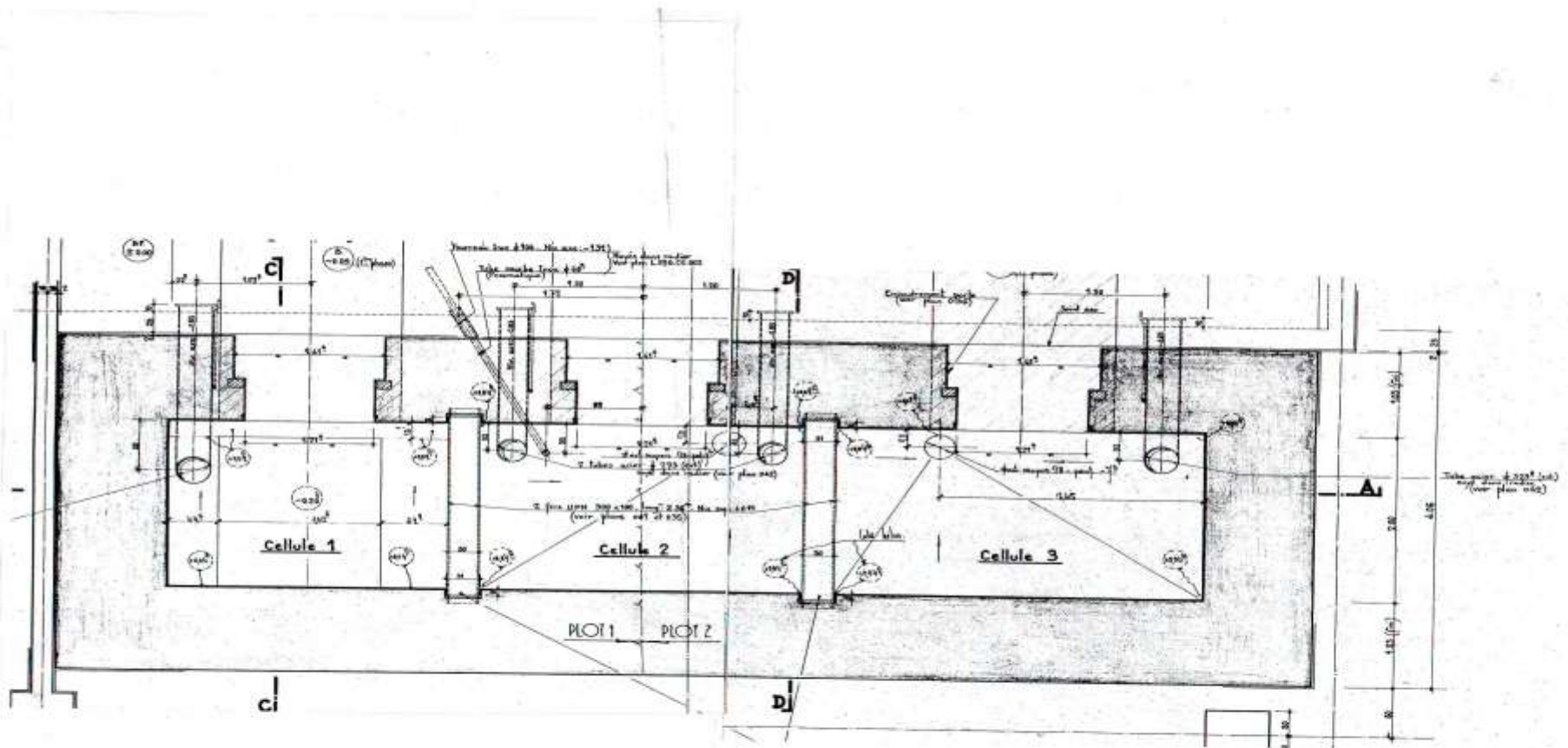
There are three concrete hot cells as shown in figs. below
Their walls thickness about 100 cm of reinforced concrete with
Iron bar diameter 2.5 cm . the inner lining made of stainless steel
Sheet (5mm) thickness. Each cell contains ; Lead glass window
,manipulator, over head crane and basket. After 1991 some equipments
were removed from the hot cells.



Three concrete hot cells

HOT CELLS REMOVAL

cont..



Plan of three concrete hot cells

HOT CELLS DISMANTING :



Tent to isolate hot cells during decontamination

Hot cells characterization



Radiological scoping



Hot cell isolation



Hot spot marking



characterization of Hot cell A



Decontamination of hot cell A





Hot spots after decontamination

DISMANTLING, SEGREGATION AND CHARACTERIZATION ACTIVITIES OF HOT CELLS EQUIPMENTS.



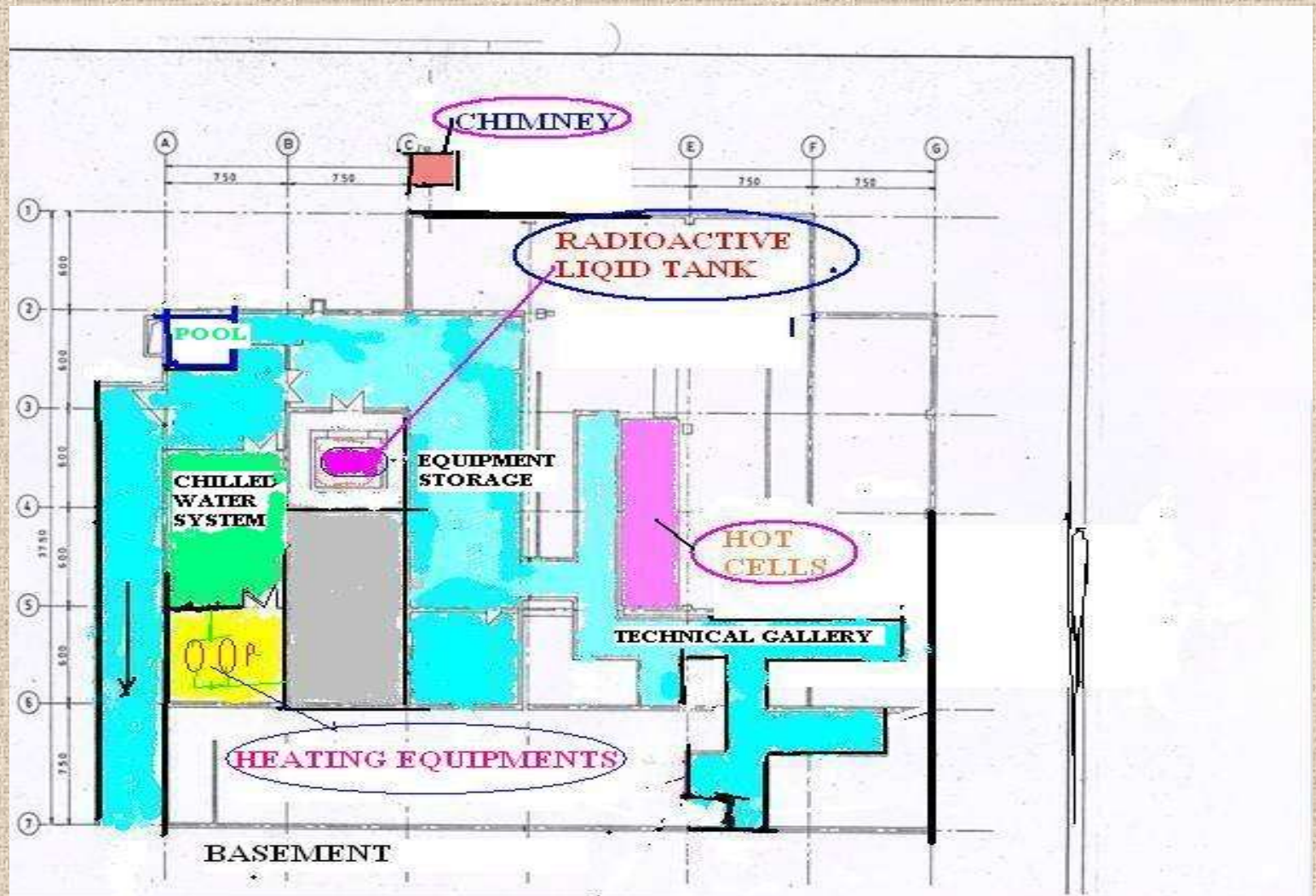


DIAMOND WIRE CUTTING MACHINE USED TO DEMOLISH THE HOT CELL WALLS

DIAMONDCORING BY DD 500



Stage (4): Dismantling the basement and its equipment.



→ Basement entrance:

basement entrance radiological scoping



scoping



Contaminated soil packing



Hot spot removal

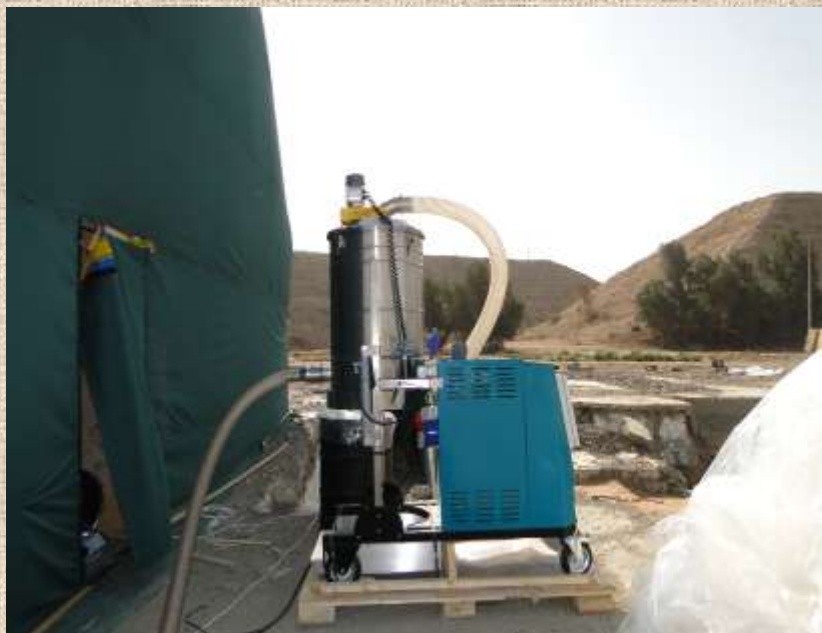


Hot spot marking



Basement before dismantling

EQUIPMENTS USED IN DECONTAMINATION



DECONTAMINATION OF WASTE TANK

Th-234=1708Bq/kg, Pa-234m=2769Bq/kg, Co-60=6.2Bq/kg, U-235=66, Th-231=29 Bq/kg, Cs-137=2.3Bq/kg





basement rooms after dismantling equipments



Conclusion

- 1-The decommissioning of Geo pilot plant which is small scale facility located in central Baghdad was completed, released the building for re-used by the owner . it is an intact facility with uranium contamination.**

- 2-Dismantling LAMA building resulting about 1800 m3 of cleaned concrete and about 600m3 of clean metallic scrap.
also 15 americium(Am-241),10 Eu-152 radioactive source , 7 barrel(50kg/each) of contaminated mixed rubbles and soil,20L of sulery ,one contaminated steel Plate (1x1)m and one flange resulted from stages activities
the progress in decommissioning of LAMA about 85%**

- 3-Convential tools and machines are used in Decommissioning LAMA building and Geo pilot plant.**

- 4- technical cooperation including training staff ,sophisticated tools and machine will be required to start with the second phase of decommissioning program in Iraq especially IRT -5000 and Tammuz 2 reactors next year.**

NEXT PROGRAMME DECOMMISSIONING THE IRT- 5000 REACTOR



IRT-5000 REACTOR



REACTOR POOL



PRIMERY COOLING SYSTEM

Thank you