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PROJECT TERMINAL REPORT

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Contents

1. Background 3

2. Development problem and immediate problems attacked 4

3. Outputs produced and problems encountered 7
   3.1 Research on material characteristics and building techniques of the ancient Cham builders 7
   3.2 Archaeological investigation: preventive non-invasive survey, archaeological excavations, dating, GIS cataloguing 8
   3.3 Training activities 10
   3.4 Formulation of a strategy for the revision of the Conservation Masterplan of My Son 12
   3.5 Problems encountered 12

4. Objectives achieved 12

5. Recommendations 14

Annexes:

Annex 1: List of International and National Staff
Annex 2: Strategy for the Revision of the Conservation Masterplan of My Son
Annex 3: Technical Reports
   Annex 3.2 Technical Report – April 2005
   Annex 3.3 Technical Report – May 2005
   Annex 3.6 Technical Report – August 2005
Annex 4: Report on the Conservation of Selected Archaeological Artefacts
Annex 5: Reports of Architect Dang Khanh Ngoc
   Annex 5.1 Report March – June 2005
   Annex 5.2 Report July – September 2005
1. **Background**

My Son was declared a World Heritage Site in December 1999. In spite of its Outstanding cultural, historical and environmental values, this site suffered serious deterioration from man-made and natural causes such as bombing during the American War, vandalism, floods and weathering.

In 1999 a Tripartite Italian, Vienamese and UNESCO protect, financially supported by the Italian Ministry of Foreign Affairs, entitled “Investigation, Zoning and Management of My Son Monument and Archaeological Site” was started. This 3-year project (1999-2001) is geared to provide necessary comprehensive background information such as data, maps as well as a Management Plan for the long-term safeguarding of the site.

Pursuant to this tripartite project, the Government of Viet Nam expressed the wish to realize a new project devoted to the safeguarding of selected monuments of My Son by restoring a high-priority group of Cham monuments. To this end, UNESCO, the Italian Government through the Lerici Foundation and the Vietnamese Ministry of Culture and Information formulated the project “**Safeguarding My Son World Heritage – Demonstration and Training in the Application of International Standard of Conservation at My Son Group G Monuments.**”

After a careful analysis of the structural, scientific and technical conditions of the different groups of monuments in My Son In that context, the monuments of Group G were selected monuments were selected for the following reasons:

1. G Group lies on an elevated area never affected by seasonal flooding
2. G Group has never been restored (some minor interventions were done on the monuments by H. Parmentier during the period from 1903-1904)
3. G Group is a clear model how a Cham sacred area is organized
4. G Group has considerable importance from the archaeological point of view.

The scientific investigation carried out during the previous tripartite project was mainly focused on the site’s historic-archaeological problems, and on the hydro-geological situation related mainly with the frequent flooding events. Much data were collected concerning the state of conservation of My Son Cham monuments and several geophysical prospecting tests were performed in many areas of My Son in order to evaluate the capacity of different geophysical technologies to detect unknown archaeological remains still buried. Eventually a new detailed map was drawn at 1:1000 scale.
2. Development problem and immediate problems attacked

Before the start of implementation of Project 504VEI4000, the G Group area was completely covered with thick vegetation: only the G1 tower monument was visible while faint and unclear traces of G2, G3, and G5 were discernible.

One of the initial problems faced was the difficulty in evaluating the real conditions of the monuments of Group G, and the significant amount of cover material, debris and archaeological remains that need to be removed before the virgin soil can be reached.

After the reunification of Vietnam in 1975, a Decree was issued in 1978 proclaiming the importance of the My Son as a heritage site. However, Vietnamese archaeologists and architect conservators were lacking in experience in actual archaeological works.

To date, restoration of Cham monuments in other parts of Vietnam has been carried out mainly for the sake of restoring the monuments without taking into account the archaeological context of “opting for emerging instead of buried” (Le Thanh 2005).

The situation in My Son is much more complex, considering that construction of the monuments lasted for at least 1000 years from the IVth to the XIV centuries. Furthermore, the site suffered not only the normal deterioration due to time and the elements, but it was also heavily damaged by American air strikes during the American war in 1969. During the American bombing, more than half of the Cham monuments which were still existing in rather good conditions were totally or partially damaged, including the impressive Tower A1, one of the most significant masterpieces in South East Asia.

In the beginning of 1980, the Polish Government, upon request by the Vietnamese Government, started to provide technical assistance in the restoration of My Son Group B, C and D through the Polish State Institute “Pracownie Konserwacji Zabytkow”, under the guidance of arch. Kazimierz Kwiatkowski and the Vietnamese architect, Hoang Dao Kinh. Mr. Kinh was the Director of Department of Conservation, Ministry of Culture and Information of Vietnam at that time.

The Polish and Vietnamese experts faced an enormous task ahead of them, considering that the entire archaeological area was covered by debris and vegetation. Moreover, unexploded ordnances were scattered all around the site. The work progress was hampered by countless problems and the experts encountered difficulties indelineating rescue intervention to prevent the entire site from obliteration.

In this context, the Polish and Vietnamese experts did not carry out the necessary researches into the compatibility between old and new materials that had to be used during the conservation work.
The Polish architects used Portland cement in their restoration work, which permitted vegetation to grow inside joints, which resulted in significant damages to the restored monuments (i.e., D1 and D2 monuments). This could have been avoided if the Polish-Vietnamese experts carried out chemo-physical analysis on the material compatibility.

Since the first interventions at the site, H. Parmentier argued that Cham architects were using organic binders in the thin joints between bricks to prevent growth of vegetation inside the joints. But nobody was able to identify the organic binders used by the ancient builders, until thorough research was undertaken under the UNESCO project.

Considering these situations, the main issues that needed to be resolved by the UNESCO project were the following:

1. Research into material characteristics and building techniques of the ancient builders
3. Consolidation and restoration of monument remains
4. Training

Given the complexity and the needs of the project, the project was organized according to the following diagram:
3.0 Outputs produced and problems encountered

3.1 Research on material characteristics and building techniques of the ancient Cham builders

The first year of project implementation was devoted mostly on the research on building materials, particularly on the compatibility between the original building materials and new materials, to ascertain the appropriate techniques of consolidation and restoration of the ancient monuments. Another focus area was the chemical-physical analysis of the organic resin used to bind bricks together in the construction of Cham monuments.

Numerous laboratory analysis were conducted on bricks, binder, lime, clay and sand to explain the following:

- what was the construction technique of the walls, which have to be adopted in conservation works? Which new materials are compatible with the old building materials?
- What was the binder used between bricks? Would it be possible to use new materials (bricks) to replace missing parts, if a proper binder is identified, reproduced and used? (This is important to ensure the stability of restored monuments).

On the onset, the Department of Structural Engineering of the Polytechnic of Milan and the Institute of Conservation and Restoration of Monuments of Hanoi, Vietnam signed a Scientific Agreement for the exchange of researchers. Under the Agreement, Architect Dang Khanh Ngoc, a senior architect of the Hanoi Institute, and Dr. Doan Hong Minh, a chemist of the same Institute, went to the Polytechnic University of Milan to participate in the joint laboratory researches.

The joint researches yielded extremely significant results. Chemical analysis of the original binders yielded many organic components, which were found out to be similar to the organic resin of the Dipterocarpacea Alata, a tree found in Central Vietnam, Central Laos and North Thailand. This organic resin is being used by locals in caulking wooden boats and in the production of colour pigments.

Mechanical and durability tests confirmed that this organic resin can be used as binder between bricks, particularly in areas with high rainfall, such as My Son.

Mechanical and durability tests confirmed the appropriateness of this resin as joint material particularly in monsoon areas.

This organic resin was extensively used for external binding between bricks. Chemical-physical analysis found that for the internal masonry, a mortar consisting of shell-lime powder, Cham brick powder and water was used as binder.
3.2 Archaeological Investigation: preventive non-invasive survey, archaeological excavations, dating, GIS cataloguing

Prior to the start of project implementation on the G Group of monuments, several investigations had already been conducted in mapping the My Son archaeological site. However, the G Group area was covered with thick vegetation, and as such, it was extremely difficult to evaluate the thickness of the still buried cultural layer.

For this reason, geophysical prospecting and geomorphological investigations were carried out in the G Group area during the first year of project implementation. Findings showed that in at least 70% of the area surveyed, the cultural layer was at least 2.5 meters underground.

G group required an extensive archaeological work, due to two main reasons. Firstly, the G group is spread over a considerable area of around 3500 sqm. Secondly, the significant quantity of archaeological materials, still buried in primary deposition.

The area had previously been excavated between 1903 and 1904 by the French architect H. Parmentier who was tasked to rescue all the monuments in My Son, to collect and store archaeological relics in the Cham Museum in Danang and to restore the most unstable monuments. Parmentier carried out this immense tasks from 1903 to 1907. However, Parmentier choose an easier way of removing the debris covering the monuments and dumping the materials without prior documentation. He also excavated 1 meter trenches only along the perimeter of the buildings, until the first brick of the foundation. It is important to note that Parm entier’s archaeological research was mainly focused on retrieving ‘art masterpieces’, and not on the building materials, building techniques and use of the monuments.

This partly explains why during the excavation in G group, more than 1500 decorative relics have been recovered, most of them found in their original context when the Cham abandoned My Son in the XIV century.

Before excavation, the area was covered by thick vegetation composed of secondary trees and high bushes which made access difficult and reduced the visibility of the surface area.

After the American-Vietnamese conflict, the Vietnamese cleared the area bombed by the Americans by dumping of bombing debris over the debris removed during Parmentier’s excavations. Mounds of debris of more than 2 meters high from the present ground level were dumped around the edge of the hill, covering unexcavated ancient structures. The initial project activity was to remove the vegetation, to enable the project team to plan how to excavate appropriately the area. The clearing of the vegetation was carefully done, so that any single brick or relic would be recorded using graphic and photographic documentation.
The trees were cut systematically, according to the depth of their roots. The first three months were devoted to clearing the vegetation and documentation of the rubble in the G Area. During the clearing process, many artefacts were found in the rubble – mostly architectural details in terracotta from the five monuments of the G Group. Artefacts included antefixes, tympanums with sacred representations, floral decorations and divinities related to the Hindu religious world (Laksmi, Nandi, Gajashima, Kala etc.), mainly in fragmentary state of preservation. Also found were artefacts with Chinese and Cham inscriptions, manifesting the richness of material collections found in the G Group area, which challenged the project team to conduct a long study to completely understand the archaeological site.

After the vegetation has been cleared, the project team was able to evaluate the real condition of the site, which include thousands of bricks recovered from the ground. The removal of the bricks prior to excavation of the site, demanded a special methodology, considering the following concepts:

1. the surface material needs an archaeological explanation and it must be considered part of the history of the monument.
2. the rubble removal must be performed as an archaeological excavation, to distinguish the different phases of its deposition.
3. the rubble resulting from the collapsing of the monuments is a chronological indicator in the reconstruction of the phases of decay, or spoliation or violent action.

In applying this methodology, the project team introduced this investigation methodology to the Vietnamese technical experts and archaeologists who had no prior training in the proper documentation and investigation of archaeological sites.

The area was divided into grids of 20m x 20 m, where trenches of different sizes were opened. All the bricks were cleaned, sorted and stored according to their typology, ready to be re-used during the consolidation of the monuments. When the whole area has been cleared, a new levelling of the area was recorded, making it possible for the project team to start investigation aimed at recovering the original ground level, which was in use during the Cham period. The excavation area covered 2,500 sq.m.

Furthermore, the interior of all the monuments included in the G Group were cleared of rubble, and were excavated to the foundation, including the “cella” of the main temple. Seven different stratigraphic layers were identified, indicating the original level of the ground, as well as the burning and spoliation layers which probably occurred at the beginning of XII century.

**Excavation results:**

1. The enclosing wall, surrounding the main temple which has a perimeter of about 100 meters, has been recovered during the excavation. Considering that this enclosing wall is the only original wall of its kind found in the entire My Son archaeological site, the project team decided to restore the enclosing wall.
2. The cella of the main shrine has showed the foundation room, with the original markers left by the Cham architects.

3. The artefacts recovered included about 1,500 architectural details, as well as a large amount of pottery shards which were not found nor researched during the past researches in My Son. This helped in the general understanding of the site.

4. Bi-lingual inscriptions in Chinese and Cham were found, carved on the tennons of the antefixes. The Chinese factor in the Cham monuments were not known before.

5. The ancient drainage system in the G Group was discovered during the archaeological research, making it possible to be integrated into the interpretation of the site for visitors.

**Inventory and cataloguing:**

All the archaeological material and recovered artefacts have been cleaned, recorded (photo and drawings), inventoried and catalogued. During project implementation, the Vietnamese team of experts and technicians were extensively trained on the proper storage of archaeological materials – a task which was often neglected in the past, due to lack of time and preparation. Every single archaeological material, including pottery shard, has been stored and classified. Considering the significant amount of archaeological materials recovered, an extensive research is required in the future.

**Material restoration:**

One of the activities undertaken by the Project Team was the restoration of a selection and restoration of the most significant objects found in the G Group area. This provided the opportunity for local Vietnamese experts to be trained in the restoration and conservation of terracotta objects.

### 3.3 Training Activities

During the three years of project implementation, careful attention was given to the training of the Vietnamese experts/technicians and workers in archaeological excavation, consolidation and restoration. As a case in point, the Vietnamese workers numbering 58 were mainly farmers before the project began. After three years involvement in the project, the technical skills of the workers dramatically improved.

The technical team of Vietnamese archaeologists, geologists, geophysicists, surveyors, draftsmen were introduced and trained in the international standards of conservation. International and national experts and technicians involved in the project were as follows:
7 International architects
5 International archaeologists
3 International Geoscientists (2 geophysicists and 1 geomorphologist)
2 TLC Dating International researchers
2 International surveyors
4 National geophysicists
1 National geomorphologist
3 National archaeologists
4 National architects
4 National draftsmen
2 National surveyors
10 Officers from local staff

The training imparted by international experts on the national experts were of different levels and aspects. The Vietnamese geophysicists have good academic background and are scientifically prepared. Their skills were enhanced with the training they received from the international experts on geophysical prospecting for archaeology and the use of non-invasive diagnostic technology for evaluating the individual risk of monuments and impact risk on buried structures. The Vietnamese geomorphologists were also trained to use these technologies in the assessment of archaeological problems.

In the case of the Vietnamese archaeologists, their training was focused on stratigraphic excavation techniques. For the Vietnamese architects, their training were on the different techniques of geometrical surveying by using total stations and the reconnaissance of different crack pattern.

Vietnamese draftsman has been trained mainly in drawing archaeological stratigraphic, archaeological excavation plan and drawing archaeological object according the international standards.

Some of the Vietnamese workers became skilled in stratigraphic excavation (11 persons), 3 as assistant surveyors, 5 as assistant restorers of archaeological objects, and 6 became adept at classifying different type of bricks.

Under the direct supervision of Patrizia Zolese (Chief Technical Advisor of the My Son Conservation Project), Federico Barocco
With the assistance and supervision of Patrizia Zolese, archaeologist and Chief Technical Advisor of My Son Conservation Project, Federico Barocco, an archaeologist of the Italian team will be responsible for training UN Volunteers under a project entitled “Cham Heritage Training Youth in Cultural Heritage Preservation in Vietnam”, which was conceptualized by the UNESCO Hanoi Office.

After three years of project implementation, the project has successfully trained a core of experts and technicians in the conservation of archaeological monuments.

3.4 Formulation of a strategy for the revision of the Conservation Masterplan of
My Son

In January 2005, Dr. Christopher Young undertook a mission to Viet Nam to review the draft Masterplan for the Conservation and Rehabilitation of My Son Heritage Site (which was prepared by the Conservation Institute of the Ministry of Culture and Information in 2003) and to formulate with concerned Vietnamese authorities a strategy, work plan and timetable for the revision and completion of the draft Masterplan, in conformity with international standards of conservation. The Conservation Institute of the Ministry of Culture and Information is currently finalizing the revised draft of the Masterplan. (Refer to Annex II: Strategy for the Revision of the Conservation Masterplan of My Son)

3.5 Problems encountered

a. The Lerici Foundation usually prepared a work plan and timetable for project activities for each year of project implementation. The workplan and timetable were submitted to the concerned Vietnamese authorities before the start of the year’s activities. However, project activities in the field were generally delayed due to the unavailability of adequate number of workers and/or unavailability of materials and tools needed by the workers. This was mainly due to the frequent absence of the National Project Manager in the project site, as well as his inability to make on-the-spot decisions regarding human and material requirements at the site.

b. No field work is possible during the raining season, thus limiting the period of time for project implementation. Usually, no work can be done on site from October – January, due to heavy rains.

4. Objectives achieved

There were six objectives listed in the project document. Comments on each objective are as follows:

a. Comprehensive archaeological investigation of the monuments of the G group and philological studies of steles related to the G group.

The following activities were successfully carried out during project implementation:

- Geophysical survey map of G Area
- Geomorphologic Map of G Area
- Archaeological excavation of 80% of G Area
- Restoration of 26 terracotta objects
- Exposing and restoring of 60% of Laterite enclosing wall
- Discovering the organic binder used by Cham at My Son
- Consolidation and Restoration of G3 Building
• Consolidation and Restoration of G5 Building
• Consolidation of North-West corner of G1 Building
• Recovery of the drainage system of G3, G5 and the rehabilitation of the ancient drainage system inside the enclosing walls

b. Cataloguing of all items/objects from the G Group.

All artefacts and items found in the G Group area were identified, catalogued and properly stored. Considering the significant number of artefacts and archaeological relics recovered from the site, numbering more than 1,500, additional research is required to fully understand the significance of the recovered items.

c. Consolidation and conservation of all monuments of the G Group according to International World Heritage Standards.

Due to the complexity of the technical problems and the significant numbers of archaeological relics recovered from the G Group which had to be documented before they were removed, catalogued and stored, not all of the monuments were consolidated during the project implementation. Given this, a Phase II of the project has been submitted for consideration by the government donor of Italy, to complete the consolidation and restoration of the remaining monuments (G2 and G4) in the G Group.

d. Comprehensive planning for visitor access within the context of the fragile status of the monuments of the site.

Considering that not all structures in the G Group have been consolidated, the site could not be prepared for site visitation. The preparation of the G Group area for site visitation, as well as the development of an integrated site interpretation plan for the site, are proposed as activities to be undertaken during the Phase II of project implementation.

e. The acquisition of optimal technical expertise, together with sufficient equipment and training for conservation and site site management staff.

The project has succeeded in realizing this objective.

f. Capacity building and training for members of the provincial department of My Son for the sustainable long-term conservation and management of the monuments and site.

Capacity building has been a priority issue in the implementation of the 3-year project. However, the Quang Nam Provincial Center for Conservation of Monuments and Heritage, which is responsible for site management, has not been able to provide qualified expert/s from its own staff, except for a few architects who were sporadically assigned to My Son, to be trained by
the international experts. Given this, most of the Vietnamese experts and technicians who benefited from the on-site training were from the national Ministry of Culture and Information, based in Hanoi.

5. Recommendations

It is recommended that a Phase II of the project be considered for funding by the donor government of Italy. The duration of the project Phase II will be a one year, which is required to complete the following activities in the G Group of monuments:

- archaeological excavation of the remaining area (approximately 20% of the total area of the G Group of monuments)
- the consolidation and restoration of G2 and G4 monuments
- the remaining 40% of the laterite enclosing wall
- preparation of the G Group site for visitation

On the part of the concerned Vietnamese authorities, the Institute for Conservation of Monuments of Hanoi should be encouraged to exert effort to complete the revision of the Master Plan for the Conservation of My Son, in accordance with the recommendations of Mr. Christopher Young (refer to Annex II) and in close consultation with the key stakeholders and members of the Steering Group which was created to guide the re-drafting of the Master Plan.

It is also recommended that the Quang Nam Provincial Center for Conservation of Monuments and Heritage, which is responsible for management of the World Heritage Site of My Son Sanctuary, should be encouraged to invest in hiring the long-term services of qualified archaeologists, architects and other experts and technicians to study and manage the site, in accordance with international World Heritage standards of conservation. This is of extreme importance if the World Heritage Site were to be sustainably managed in the long term. During the implementation of 3-year project, the international experts were able to train only the national experts based in Hanoi, considering the absence of qualified experts and technicians at the Quang Nam Provincial Center for Conservation of Monuments and Heritage.