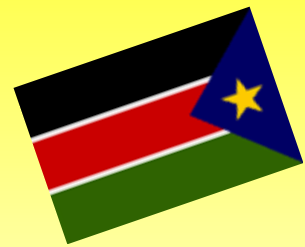


Global Disaster Management Team



# SOUTHERN SUDAN HOSPITAL PROJECT



PICTURE DIARY FROM THE NEW  
KATIKO REFERRAL HOSPITAL IN KAPOETA, SOUTHERN SUDAN



WORKING ON BEHALF OF GOSS - GOVERNMENT OF SOUTHERN SUDAN, MINISTRY OF HEALTH



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# Norwegian Mobile and Semi Permanent Hospitals



**Normeca<sup>AS</sup>**  
SUPPLIER OF MOBILE HOSPITALS

To whom it might concern

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BANKERS: UNION BANK OF NORWAY  
ACCOUNT NUMBER: 1628.07.02106  
COMPANY REG. NO.: NO 934 111 931 VAT  
NATO REG. NUMBER: N-3162

Your ref:

Date:

Our ref:

Date: 01.08.2007

On behalf of the company and the employees, I would like to thank the Ministry of Health especially and the Government of Southern Sudan generally for the confidence shown us by awarding the important task of building 10 state hospitals including accommodation for the hospital staff and delivery of 50 mobile clinics and 2 floating hospitals on the river Nile, plus the management of it all the first 5 years. All of us in Normeca are very proud to be the company doing this very important work on behalf of the Government of Southern Sudan.

Further more we would like to thank the local authorities in Torrit and Kapoeta for the good support during and after the construction of the hospital and accommodation. This support has been crucial to the success of the first step of the project.

We would also like to take the opportunity to thank all our sub- suppliers and sub-contractors all over the world. Their support has also been paramount to the establishing of this first hospital including accommodation.

In addition we must not forget all the employees locally who have done a great job in record time. The slight delay of the building has been caused by unforeseen road and transport conditions. Even though our plan was to have the hospital finished earlier, most of the reason for delay was because of extremely difficult transportation and roads. The efforts undertaken by our local and international staff to get the hospital ready has lead to many long days. Many of our staff has been working as many as 16 hours a day to get the hospital ready.

Our sincere thanks go to the authorities in Kenya for good support and particularly good cooperation. Under such circumstances and with such support, our work is made both easier and more efficient.

We would also like to thank our medical staff so far for very good work, both with the implantation of the medical equipment and treatment of patients. We have between early June and to end of August already treated around 7.000 patients.

Finally I would like to thank all the employees of Normeca AS, both at home in Norway and those who have participated on the project in Kapoeta. Also I want to thank all our employees in Nairobi, Addis, Juba, Khartoum, Dubai and Bangkok. Without all of their effort before and during the construction it would have taken much more time to complete this first hospital.

Best regards  
Normeca AS

Jan Karlsen  
President

OSLO - COPENHAGEN - ANKARA - TOKYO - BANGKOK - ABU DHABI - MIAMI - KUALA LUMPUR - KHARTUM

MEMBER OF: THE NORWEGIAN ASSOCIATION OF DEFENCE SUPPLIERS (NADS)  
THE NORWEGIAN ASSOCIATION OF MEDICAL SUPPLIERS (NAMS)  
OSLO CHAMBER OF COMMERCE, NORWAY



**Normeca<sup>AS</sup>**

# Global Disaster Management Team

## THE CONTRACT

The contract was signed in Juba, the capital of Southern Sudan on Saturday, September 16th, 2006 between the Ministry of Health and Normeca AS. The contract was witnessed and signed by the Ministry of Finance and Ministry of Justice.



10 state hospitals, all together with 1.000 beds fully equipped, turn key ready to use.



Each hospital shall have accommodation units, all together for 1.500 hospital staff members based in 900 flatpack containers.



Each hospital shall have 5 mobile clinics. Each clinic has 3 trailers and is self contained for at least 3 – 4 weeks without re-supply.



A separate contract is signed for delivery of 2 floating hospitals on the river Nile.



A separate contract is signed for 5 years management, including all kind of staff, maintenance, security and after supply, including catering.

# Norwegian Mobile and Semi Permanent Hospitals

## LOCATION OF THE SITE

The first hospital is located in Kapoeta, Southern Sudan around 100 km from the border to Kenya and approximately 1.700 km from Mombasa.



Sudan is about the same size as Europe.

Southern Sudan is approximately the same size as France.

There are living around 740.000 people in the area that the hospital has to cover.

Southern Sudan has had a civilian war for years until 2005 when the peace agreement was signed.

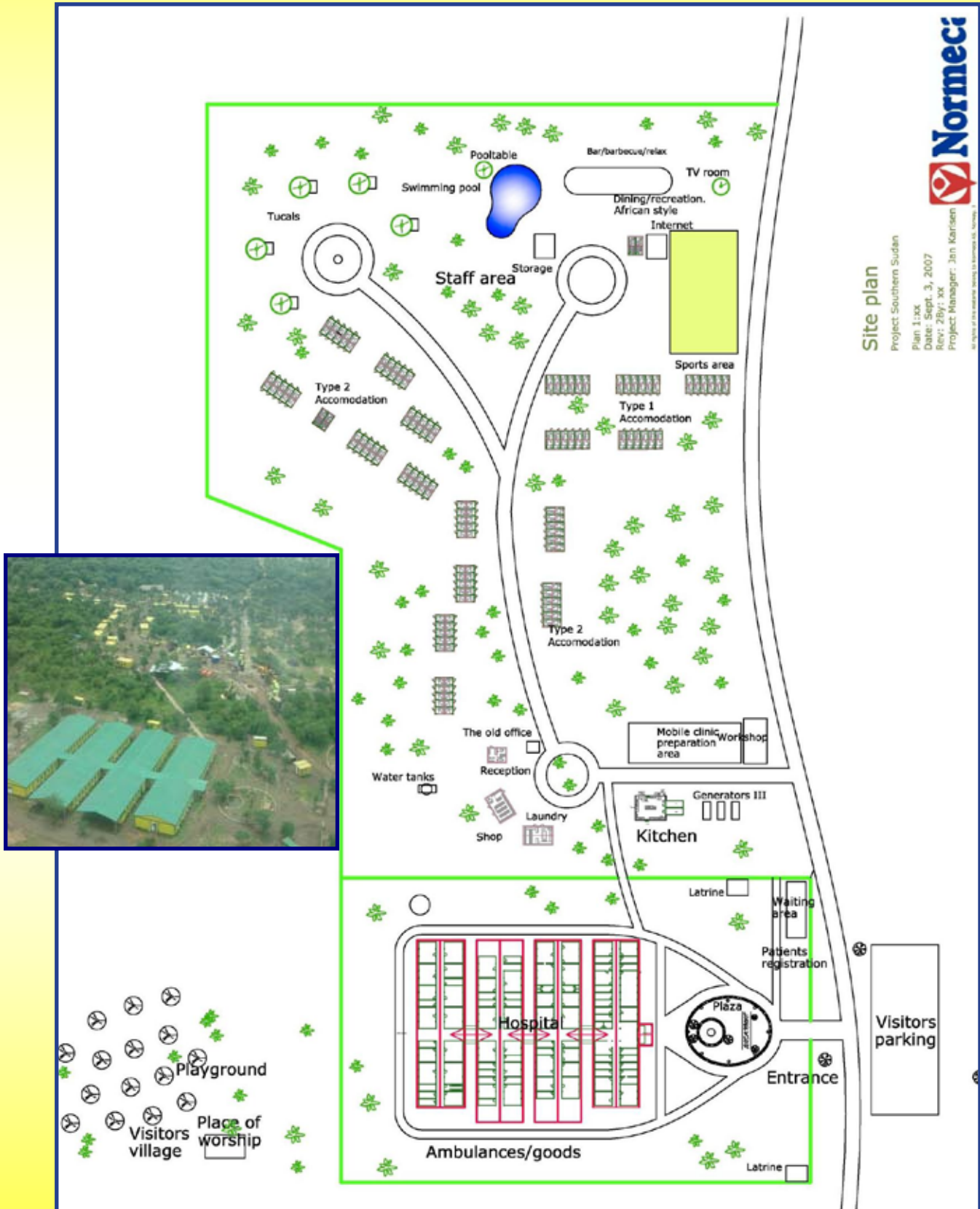
The name Sudan means "The Black Man's Country".

People have lived in Sudan for at least 9 million years.

# Global Disaster Management Team

## LAYOUT OF THE SITE

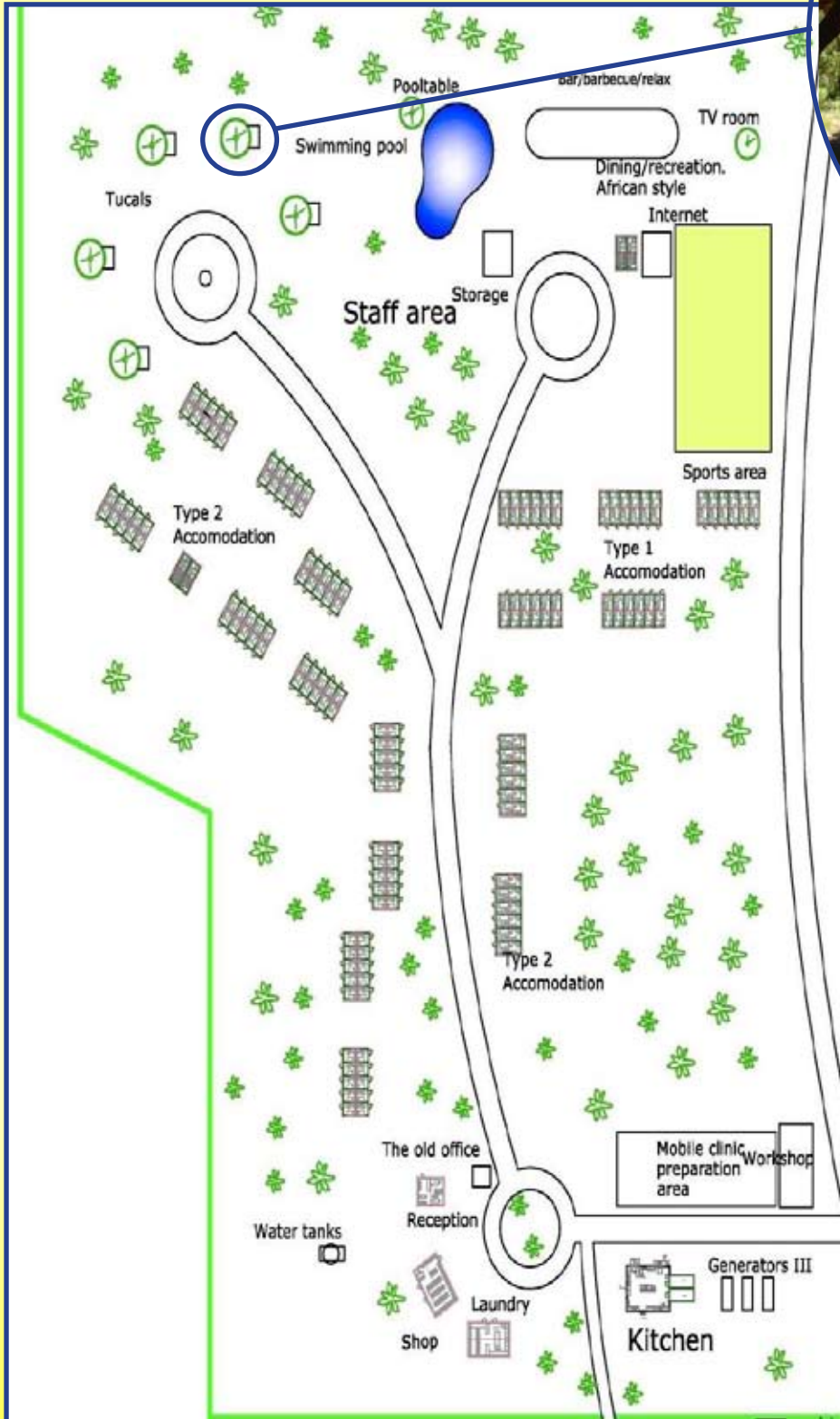
The site is totally 90.000 m2 all together with 1500 m fence.





## LAYOUT OF THE ACCOMMODATION

It has 160 beds, reception area, tax free shop, laundry, kitchen, dining area, TV room, swimming pool and more.



# Norwegian Mobile and Semi Permanent Hospitals

## THE TRANSPORT

To fulfill the first part of the contract, Normeca AS had to bring in 10 semi trailers, 1 truck w/ crane, 2 heavy trucks and a broad range of road building equipment both to develop the road net and to be able to develop the needed infrastructure and lines of supply to the hospital.



Just to give you an idea, the present conditions of roads have led to a spending of about EURO 50 000 on tires during the first 4 months, and approx 4000 tons of equipment have been brought in to Kapoeta via Mombasa in Kenya.



The distance of 1.700 km has until now been our greatest challenge because of the conditions of the roads. Trailers have been caught in the river, and there have been delays of up to 3 weeks because of bridges which have been caught by the flooding waters.



The truck taken by the river close to Nadapal.





# Global Disaster Management Team

## THE CONSTRUCTION

Most of the buildings have been raised from flat packed 20ft containers put up in rows with hallways and roof that makes it all look like prefabricated housing.

All the containers were erected within 65 days ready to use both the hospital and the accommodations.



Start hospital 01 May 2007.



4 flatpack containers are the same size as one 20 ft container.



The hospital alone is 162 flatpack containers.



One flatpack container is 2000 kg.



Hospital finished 05 June 2007.



# Norwegian Mobile and Semi Permanent Hospitals

## THE HOSPITAL

The machines, the equipment and more than 200 containers have finally reached their target and as a result, the entire hospital is now ready to be officially opened.



The hospital in July 2007

Between 300 - 400 employees have been working at the site in Kapoeta during the last 6 months. 80 % of these have been locally employed, the rest have been recruited from 15 different countries such as Norway, Denmark, England, Kenya, Somalia, Congo, India, Thailand, the Philippines, Brunei, Tanzania and other Countries



The hospital site February 2007



# Global Disaster Management Team



The hospital covers nearly 4000m<sup>2</sup> floor space.

It has 4 operation theatres and 2 Pre. Op.



Main corridor in the hospital.



The Pre. Op. can easily be changed into fully operative operating theatre.



Dining room for the staff.



The OT is very well equipped.

The hospital has a total capacity of up to 180 beds, daily standard is 150 beds.

# Norwegian Mobile and Semi Permanent Hospitals

Furthermore it disposes a modern x-ray unit, a special department for infants with nursery and delivery ward, facilities to keep patients in quarantine, an emergency room, sterilization central, a polyclinic, a dental clinic, a blood bank, laboratories and more.



Newborn with 15 beds.



ICU with 6 beds.



X-Ray



ENT Doctor's office



Children's ward

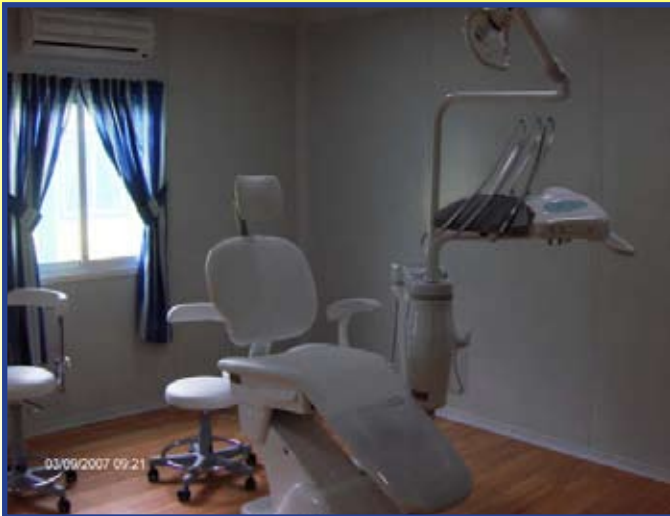


Playroom for children

The standard of equipment comes close to recent Scandinavian standards. The hospital has 150 patient beds, and it will be manned by a staff of approximately 220 professionals. All rooms are equipped with A/C which required mounting of more than 390 air conditioning units. Three generators with a capacity of 400KVA each have been installed to supply the hospital and accommodation with power. We have drilled 110m to find a good and reliable water supply for the hospital and accommodations.

# Global Disaster Management Team

More than 4.000 tons of equipment has been brought in by truck via Mombassa in Kenya. The distance by road is 1.700 km.



Dental room



Operating theatre with C-arm



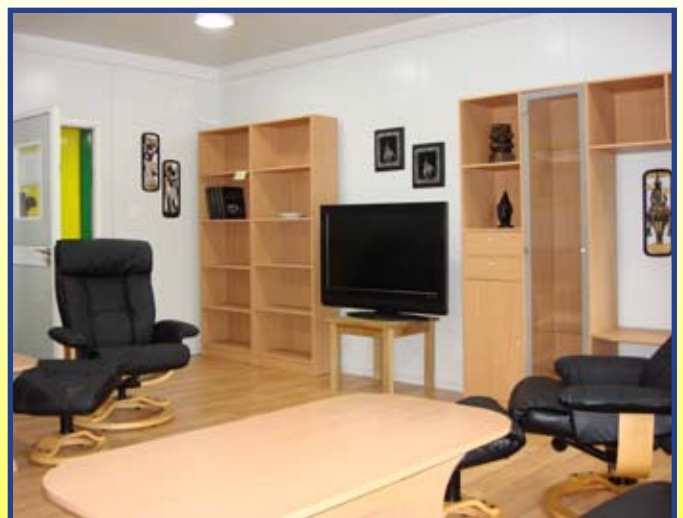
Delivery room



Sterilization room



Doctor's office



TV/relax room for the staff

# Norwegian Mobile and Semi Permanent Hospitals

## THE ACCOMMODATION & INFRASTRUCTURE

The accommodation units for staff contain 160 beds in the same type container based structures as the hospital, where most of rooms have separate bathrooms. Five local "tucals" with European standard has been built to accommodate the management staff. A leisure area with a bar, a dining area, a TV room, a pool table, an internet café, a gym, and a swimming pool, provide the employees with rest and activities off work. An effort is made to ensure that the environment is as appealing as possible to make people thrive.



We have built accommodation in containers for 150 employees..



We have built 5 tucals for accommodation for up to 10 employees.



We have built a leisure area with bar, dining, TV room, pool table, internet café, gym & pool. Only the dining area alone is 350 m2.

# Global Disaster Management Team

Two water boreholes each 110m deep has been drilled to get clean water supply for the hospital. Eight big sewage tanks have been built and kilometers of drainage have been dug down to the ground. Kilometers with electric cables have been dug down to the ground and close 300 outdoor lights have been mounted.



The first Normeca office at the site



Three generators, each on 400 KVA



The kitchen inside during the construction



Kitchen with walkway from the hospital



Living room in one of the tucals



Accommodation in container

# Norwegian Mobile and Semi Permanent Hospitals

## THE NORMECA CAMP

The Normeca camp accommodated up to 100 people in tents at the most.

There was one container with two showers and four toilets plus outside showers and drop toilets for all these people.

About 600 meals were prepared almost every day over open fire for all the workers at the site.



Toilets and shower used during the construction



Camp for the construction team



The camp in heavy rain



Dining area used during construction



Dining area used during construction



# Global Disaster Management Team



The complete site in November 2007. The site is 90.000m2.



Transport of the workers into Kapoeta

It has been used 3-400 local workers during the period of construction



Staff meeting at the site

# Norwegian Mobile and Semi Permanent Hospitals

## FACTS ABOUT THE SITE

The total site area is about 90 000m<sup>2</sup> with a 1.500m fence and 3 km of road to carry heavy vehicles. Eight big sewage tanks and kilometers of drainage and cable have been dug down. Our cars and trailers have driven more than 500 000km in 5 months. On certain stretches it has taken us 14 hours to advance 25km due to the unsatisfactory conditions of the roads. The longest vehicle that we took from Mombasa to Kapoeta was 26m weighing 70 tons. All needed diesel must be transported from Kenya and Uganda. Meat is mostly provided locally by buying sheep and cows that are slaughtered and prepared on the site.

- The area of the site is about 90 000m<sup>2</sup>.

- 1.500m fence surrounds the site.

- A 3km road was made for heavy machinery.

- More than 1.800 m water pipeline and more than 1.100 m waste water pipeline have been installed.

- There is more than 400 meters with electrical main cable, 1.400m with distribution cable, 8.000m with other cables and 1.600m with computer cables.

- 1.200 m<sup>3</sup> sand have been brought from 30 km away.

- 1.400 m<sup>3</sup> with aggregate have been brought from 60 km away.

- 3.200 m<sup>3</sup> with maram have been brought from 20 km away.

- 1.300 m<sup>3</sup> with local stone for the tucals, kitchen and bar area have been collected 22 km away.

- We had to drive 1100 km each way to transport the 400 tons of cement that we have used on the site.

- 600 000 l with water has been brought from Kapoeta to the site, a distance of 14 km each way.

- 1.4 km of walkways has been laid on the site.

- A total of 170 pcs. 20 ft containers and 20 pcs. 40 ft containers has been transported the 1.700 km to Kapoeta from Mombasa.

- Two water boreholes, each 110 m deep has been drilled.

- 4.000 tons of equipment has been transported to the hospital.

- 400.000 liters of diesel has been needed so far.



# Global Disaster Management Team

## MEDICAL SITUATION

The Hospital has adequate facilities and is well equipped to accommodate up to 150 patients admitted in addition to outpatients.

There is accommodation for about 160 staff and employees.

### Departments in the hospital:

Surgery

Gynecology and obstetrics

Pediatrics

Eye

Internal Medicine; tropic / infection

Outpatients and mobile clinics (Staffed with GP, Medical Officers and public health educated nurses)

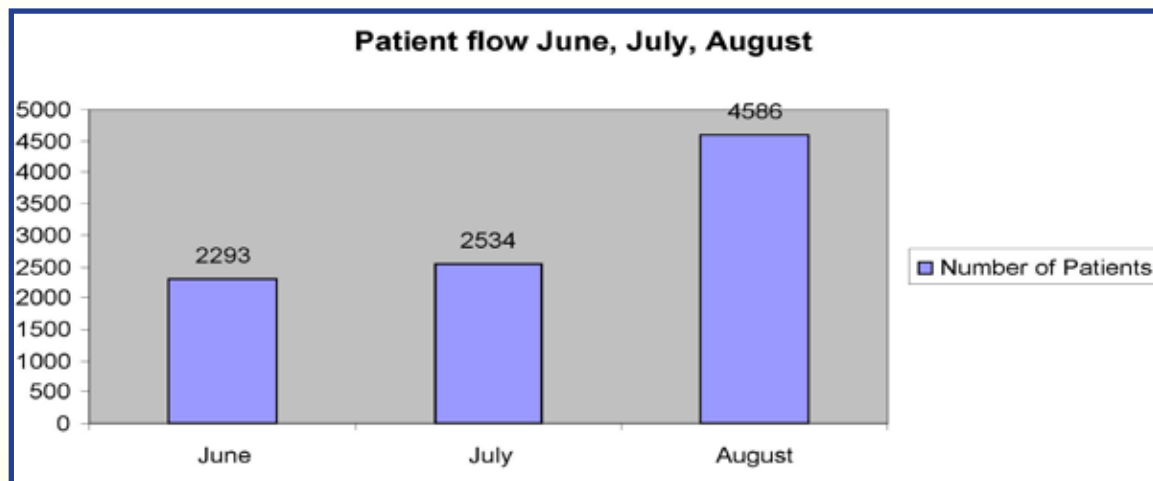
Very satisfactory; ward, OR, ICU, Step down units, examination rooms, patients facilities

Very satisfactory laboratory equipment with professional staff

Radiology with ultrasound / Doppler in feasibility period



## CLINICAL ACTIVITY REPORT

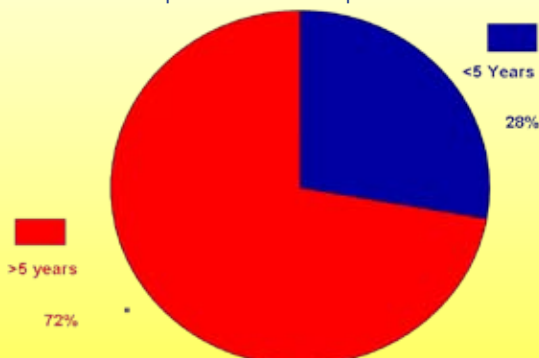


Total of 9 413 patients treated, mostly in OPD. from June to August 2007.

Until end of 2007 more than 18 000 patients have been treated in the hospital.

## CHILDREN - THE BIGGEST GROUP

Proportion of cases from patients under five patients



Around 28% of the total cases are from children under five as depicted from the figure above. This is the biggest group age.

# Norwegian Mobile and Semi Permanent Hospitals

## OUTPATIENT DEPARTEMENT (OPD)

There were many patients from day one when we started up in June in accommodation area to meet local immediate needs. We treated around 150 patients a day, and all the way up to 300. The patients came from distant areas and it was mostly infectious diseases.



## SUPPORTIVE DEPARTEMENTS

The hospital has laboratory and radiology that is very well equipped with professional staff.



## PEDIATRICS

One third of the children under the age of 5 years are mainly infected with malaria.



The first newborn child.



Avoid marasmus!!

# Global Disaster Management Team

## GYNECOLOGY - OBSTETRICS

There is a strong need for this profession as pregnancy, female diseases and obstetrics might increase fast (high birth rate). There is a big need for good doctors and midwives in collaboration with pediatrics, anesthesia and operation.



## INTERNAL MEDICINE > INFECTIONS

Different ages different needs and sometimes diseases.

We have treatment and capacity for every one in every phase of life cycles.

Collaborates extensively with laboratory and radiology department.

In case of contagious infections, there is a modern isolation unit.



## SURGERY - TRAUMAS



We can handle single traumas and multi traumas due to good OP theatres and equipped ICU, post operatives departments and wards.

In the future with more traffic and high energy movement (speed), there will be focus on internal and external communication (infrastructure).

Trauma teams are being built with local initiative and in collaboration with local authorities.

# Norwegian Mobile and Semi Permanent Hospitals

## CHALLENGES

### Medical

Out patient station is extremely busy: patients appear along with many relatives (curiosity).  
Lack of professionals (nurses): difficulties to get Sudanese recruiting from several countries and Scandinavia (managers).

Medical panorama:

Tropical / infections: malaria, pneumonia, HIV/Aids, TB, guinea worm, septicemia, gastro enteritis and snake bites.

Challenges: How to manage epidemics and contagious diseases.

Trauma: Mostly low energy due to society development, burns, bites and wounds.

High energy trauma: rifle shot and mines.

Challenges: how to deal with multi traumas and disasters.

Preventive care: mother - child, vaccination, hygiene.

### Other perspectives

Sanitary: absolutely pre Semelweiss period

Personal: Cleaning and clothing

Some unhygienic traditional habits

Dirty and unhygienic clothing because of poverty

Compulsory showers and wash before admittance

Water & sewers system, self made

Electricity, prolonged electricity black outs. Need backup power supply

Transportation: roads and ambulances.

Internal and external communication infrastructures such as telephones

Sustained supplies of basic equipment and medication

Nationalities, religious, tribal diversity is giving staff issues and tension.

### Special medical challenges

Too young (juvenile) mothers

Many mothers between 14 and 16 years

Aspects of having kids in poverty and being juvenile

First cesarean section done June 2007, first in 15 years. Cesarean section rate should be approx. 5 – 7%

Kids

Typical burns: buttock, genitalia, groin, thighs, gunshots wounds

Accident, family tragedies or punishment.

Epidemics

They will come

Will we be prepared?

Trauma

High energy by rifle shot traumas and mines

A generation of post war, mostly post-traumatic and armed kids.



# Global Disaster Management Team



## GOVERNMENT OF SOUTHERN SUDAN (GOSS),

MINISTRY OF HEALTH  
OFFICE OF THE MINISTER

Our Ref.: M.O.H./G.O.S.S/J/32-A-5

Date: 16.9.2006

Your Ref.: .....

To: NORMECA AS .NORWAY

### SUBJECT: AUTHORIZATION

We hereby confirm that the company Normeca AS with registered address in Mailandsveien 12, 1470 Lorenskog in Norway, company reg.no. NO-934111 931 VAT is working on behalf of the Ministry of Health ,Government of Southern Sudan, to build 10 state hospitals each minimum 100 beds including accommodation for up to 150 staff for each hospital and to implement 50 mobile clinics and two floating hospitals.

The project is a total turn key project where also Normeca AS will take care of the daily operation of all hospitals and clinics on behalf of the Ministry of Health and take care of all types of management, all kinds of staff, logistics with more. Capacity building is an important integral part of the project and over the next 24 months, the project is expected to employ more than 2 000 employees and train all categories of medical personnel.

Normeca AS has the right to use as subtitle on all stationary, vehicles and other places where appropriate, "Working on Behalf of Ministry of Health Government of Southern Sudan (G.O.S.S)". We will be very pleased if you can give Normeca AS all necessary support in this very important project in South Sudan.

Sincerely Yours,

H.E Dr. Theophilus Ochang Lotti  
Minister of Health  
Government of Southern Sudan (G.O.S.S)



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Tel: (+249-811820678 / +249-811820134) E-mail: mohgoss\_juba@yahoo.com

Nairobi Liaison office: P.O. Box 10114 - 00100 GPO,

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Sat Phone: +8821643331586.



# Norwegian Mobile and Semi Permanent Hospitals

## Some General Information about Normeca and our other products

Normeca A/S was established in 1983 and today is a 93% owned Norwegian company. The special competence of Normeca A/S is equipment provided for anaesthesia, ICU, CCU as well as for emergency medicine, operating theatre in the domestic marked and mobile hospitals and clinics on the export marked.

Normeca A/S represents a number of larger international suppliers of medical equipment as Dameca and Ambu in Denmark, Provita, Medifa and KaWe in Germany, Novamatrix in the USA and Mindray in China, to mention some of them.



- Anaesthesia, monitoring and specialised operating equipment for the norwegian marked.



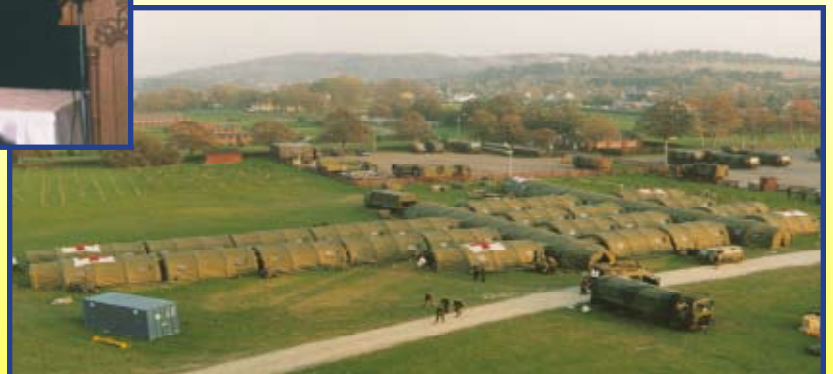
- Decontaminating and protective clothing



-Mobile floating hospitals



-Seminars, local and international, more than 6000 have participated in our seminars the last 25 years.



-Mobile hospital based in tents within 24hours.



# Global Disaster Management Team

By own research as well as by co-operation with a number of institutions like Norwegian Defence Research Establishments, Medical Department of the Norwegian HQ Defence Command, Medical Regiment of the Norwegian Army, Medical Regiment of the Danish Army, etc., Normeca A/S has developed a number of special products for field / mobile hospitals and equipment for military personnel. Armed forces of various countries world-wide have already purchased this equipment. Today we have customers in the Armed forces of Japan and China in the Far East, USA and Canada in the West, the Scandinavian countries in the North and the countries of Middle East / Africa in the South.



With regard to the field / mobile hospitals, our company has developed the most complete package solutions within this area and at present we are able to deliver several versions of the complete field / mobile hospital and related equipment. In addition to the above-mentioned manufacturers of medical equipment,

Normeca A/S co-operates with 35 suppliers, 25 of which are fully owned Norwegian companies. This co-operation gives us all the possibilities to meet our customers` requirements in the best possible way.



Normeca A/S has its own branch offices through Joint Venture, directly and / or through an agreement of co-operation in Denmark, UAE, Ethiopia, Kenya, Sudan, Southern Sudan, Thailand, as well as in Tokyo in Japan (where we have 16 employees), and Seattle in the USA. Besides, Normeca A/S has agents and / or distributors in approximately 70 - 80 countries world-wide.

Our company's staff in Norway has 22 employees. There are several engineers and also nursing personnel among company's employees. Our co-operation with Medical Regiment of the Royal Norwegian Army and the Norwegian Defence Research Establishments provides us with a high level of skills of the army physicians.



Through the chain of suppliers with thousands of highly skilled employees we are guaranteed support within all areas of our business. Normeca A/S has also partners within architecture, consulting, Warmth / Ventilation / Sanitary and electricity services for the public health sector. After many years of practice Normeca A/S has gained wide experience in preventive maintenance of medical equipment. Since the early eighties our company has had contracts on service for approximately 60 - 65 % of the hospitals in Norway within anaesthesia and ICU, and also for a large number of dentists within analgesia. In addition to this Normeca A/S has regularly performed service and larger reconstructions for the Royal Norwegian Army, .



# Norwegian Mobile and Semi Permanent Hospitals

## Experiences from the field

### CUBA

In December 2005 Normeca AS delivered a mobile hospital to Cuba for preparedness in Latin America. This hospital, based on tents, has been moved to Indonesia after the earthquake in May 2006 and established there on behalf of the Government of Cuba.



### PAKISTAN

In October 2005 a heavy earth quake hit several areas in Pakistan. Straight after it Normeca AS has got an inquiry from Cuba's authorities for supplying of a field hospital based on tents that should be run by a Cuban medical team. This hospital has been delivered in Muzaffarabad. During the first months of 2006 Normeca AS has also delivered a field hospital in Hattian Bala, Pakistan, for Medecins Sans Frontieres based on flat pack containers. This hospital included operating theatre, ICU, doctors' office, pharmacy, laboratory, blood bank, shower and toilets. The delivery was complete with generator, heating and cooling plants, water purifying system, etc.



# Global Disaster Management Team

## THAILAND and INDONESIA

After the tsunami 26.12.2004 Normeca AS has delivered a complete field hospital to Sumatra by the Japanese Red Cross. The company has also build up the Site 2 in Mai Kao, Phuket, Thailand for identification of dead bodies. Normeca AS delivered this forensic medicine centre as a turn key, and the company has had the total responsibility for running the site, including, among others, logistic, catering, security and maintenance until winter



After the tsunami the Thai Government reported 5 395 confirmed deaths, 8 457 injuries and 3 120 missing in Thailand from 44 countries. The Thai authorities estimated that 8 000 are likely to have died. A fantastic job was done by the local rescue workers and police with rescuing as many as possible, and also to get all the dead transported to the different temple areas. It was established DVI (Disaster Victims Identification) centres in Khao Lak, outside Phuket Town and in Krabi. The first couple of weeks the DVI personnel were forced to work outside under the open sky in extremely trying conditions.

It soon became evident that if they should be able to identify as many victims as possible, the working conditions had to change dramatically. Normeca AS suggested at an early stage to build up an Identification Centre based on flat packed containers with air conditioning, water supply and other necessary equipment.



# Norwegian Mobile and Semi Permanent Hospitals



Thai Tsunami Victim Identification Centre



KATIKO Referral Hospital, Southern Sudan



MSF Hospital, Hattian Bala, Pakistan



Inside OT in KATIKO Referral Hospital



*Number One  
in  
the world  
within  
partly and turn key  
solutions  
incl.*



Inside MSF Hospital in Hattian Bala



All kinds of clinics or hospitals in MultiSpace

*Transportation,  
Erection,  
Management,  
Training,  
Maintenance,  
Education,  
Administration,  
Storage,  
Outsourcing,  
Medivac,  
etc.*



Cuban Hospital, Muzaffarabad, Pakistan



NorCat Floating Hospitals



**1983 - 2008**



All kinds of Mobile Clinics



NorBase single and expandable containers



Decontamination Units



Norlense inflatable tents