

## 8.0 DECOMMISSIONING

This section provides an overview of the decommissioning activities that will be undertaken after construction and after each facility ceases operation. Decommissioning refers to the dismantling, decontamination and removal of process equipment and facility structures; the removal of surface installations; and recontouring the land and planting vegetation to prevent soil erosion as appropriate. Assuming there is no other use for field facilities, all structures including production, processing, treatment, storage, pumping, power, and related infrastructure facilities will be dismantled. Decommissioning is implemented after each facility has ceased operation and piping and equipment have been deactivated.

### 8.1 DECOMMISSIONING PRINCIPLES

All assets owned by the Consortium will become the property and responsibility of the appropriate government, without compensation, on the date of expiry, termination of convention or concession relinquishment in accordance with existing agreements. If the government chooses not to use the asset(s), the Consortium will remove aboveground facilities at the expense of the Consortium. Similarly, the Consortium will transfer ownership to the government, without compensation, all producing wells in good working order, except if the government requires their abandonment. Wells that cannot be used for production may be taken by the government without cost and converted by the government to water wells.

In the latter stages of the project's operations phase, a complete and comprehensive Decommissioning Plan will be prepared, specifying the activities that will be undertaken during the decommissioning and abandonment phase of the project. In certain circumstances, equipment and/or buildings may be transferred to the Republic of Chad or the Republic of Cameroon, as appropriate. The Decommissioning Plan will comply with the provisions of the Convention of Establishment signed between TOTCO and the Republic of Chad; the Convention for Exploration, Exploitation, and Transportation of Hydrocarbons in Chad signed between the Consortium and the Republic of Chad; applicable Republic of Chad legislation; the provisions of the Convention of Establishment signed between COTCO and the Republic of Cameroon; applicable Republic of Cameroon legislation; and recognized international standards for the petroleum industry.

Future decommissioning procedures will be in accordance with international standards in place at the time of decommissioning activity. For example, if decommissioning were to occur today, standards would be based on the Exploration and Production (E&P) Forum report titled "Decommissioning, Remediation, and Reclamation Guidelines for Onshore Exploration and Production Sites, No. 2.70/242" dated October 1996, and the E&P Forum report titled "Offshore Pipeline Decommissioning" dated August 1997.

## **8.2 CONSTRUCTION PHASE**

During pipeline construction, temporary support infrastructure including access roads, bridges, storage yards, and camps will be located near or adjacent to the pipeline easement. During the construction of each road, bridge, or facility, the site will be cleared and topsoil from the site will be stripped and stored for later use. As the infrastructure, logistics, and pipeline contractors move from areas where construction has been completed, the support facilities and roads will be decommissioned if no further use is warranted. Buildings, fencing, and other components will be demolished and removed, or reused at another location, as appropriate.

### **8.2.1 Site Reclamation**

Construction related sites to be decommissioned and reclaimed will be recontoured and restored so that the pre-disturbance vegetation can re-establish itself in a short period of time. Reclamation will be limited to disturbed areas of the site. To facilitate revegetation, mitigation measures that may apply include fertilizing and seeding, mulching, and surface texturing. Close attention will be paid to areas where erosion potential is high. Large plots of land such as storage yards, borrow pits, and main camp sites will be revegetated and maintained until plant growth is established.

### **8.2.2 Grading and Surface Reclamation**

Disturbed areas where temporary construction facilities existed will be returned to natural contours where possible. Areas of high erosion will be identified in the field and treated with special design measures that may include anti-erosion mats or mulching. Compaction of the subsoil will be relieved by scarification in areas of disturbance. The topsoil stored during the clearing phase of construction will be returned to the site, evenly spread and lightly packed to prevent depressions and water pockets. In areas where topsoil was not stripped, the surface will be ripped or scarified to relieve compaction. Grading and surface reclamation activities will not take place when the topsoil is muddy or the subsoil is wet.

### **8.2.3 Revegetation**

If seeding and planting is needed, native seed mixtures or plant seedlings used will be compatible with local soil conditions and climatic zones. Seed will be applied uniformly in a manner appropriate for the type of seed used, and will be placed in a firm, moist seedbed at a suitable depth. Seedlings will be planted at a density and in a manner conducive to successful growth. In disturbed temporary construction site areas with little topsoil or naturally sparse vegetation, fertilization and mulching may be included in the site reclamation work. Seeded or planted sites failing to show successful growth after one growing season will be assessed to determine causes for failure, and corrections will be made as appropriate.

## **8.3 OPERATIONS PHASE**

### **8.3.1 Oil Field Development Area**

#### **8.3.1.1 Wells, Wellheads and Pads**

Consistent with industry standards, decommissioning activities will commence when wells are no longer necessary for the oil field operations. After production ceases, all wells associated with the Komé, Bolobo, and Miandoum Fields will be decommissioned in accordance with appropriate Chadian statutes and regulations and recognized international industry standards. The productive horizon will be isolated with cement. The wellheads will be removed and the structures dismantled for recycling, sold for scrap, or disposed of properly. The wells will be permanently plugged with cement and abandoned in such a way to protect groundwater resources. Well casings will be cut off below grade, capped, and backfilled. In certain circumstances, at the request of the government, a well may be converted to a water well by the government for use by the local population. Well pads will be removed and integrated into surrounding terrain or used to fill remaining borrow pits. The land surface will be recontoured and appropriate vegetation will be planted to prevent soil erosion.

#### **8.3.1.2 Flowlines and Gathering Stations**

Flowlines will be drained, cleaned, filled with an inert substance, capped, and abandoned in place. All flowlines are buried to a depth to prevent interference with agriculture activities. Any surface penetrations of the flowlines will be removed for recycling or scrap. All gathering stations will be dismantled and scrapped, or disposed of in compliance with applicable regulations. Reusable components will be reconditioned or recycled for future use with permission of the government. Buildings will be demolished and disposed of properly or ownership will be transferred to the government. The land surface will be recontoured and appropriate vegetation will be planted to prevent soil erosion.

#### **8.3.1.3 Operations Center and Associated Structures**

The Operations Center and its related structures will be transferred to the Republic of Chad or with proper authorization, they will be dismantled and removed. The land surface will be recontoured and vegetation will be planted to prevent soil erosion.

### **8.3.2 Onshore Pipeline and Related Facilities**

#### **8.3.2.1 Pipeline and Land Easement**

The underground export pipeline will be decommissioned in accordance with applicable statutes and regulations, and international industry standards. Residual hydrocarbons will be cleaned from the pipeline and the pipeline will be filled with inert material, sealed, and abandoned in

place. All aboveground facilities such as valves, tubing, and gauges will be dismantled for recycling, sold for scrap, or disposed of properly. The actions taken during abandonment of the onshore pipeline will ensure that it:

- Does not become a potential source of contamination to surface water or groundwater
- Will not act as a conduit for surface water or groundwater
- Will not become a hazard if exposed by subsequent streambed scour and/or surface erosion.

Natural vegetation growth will be encouraged along the pipeline land easement. Induced access management controls will be left in place along the pipeline land easement and ownership transferred to the government, as appropriate.

### **8.3.2.2 Pump Stations / Pressure Reducing Station**

Equipment from the pump stations and the PRS will be dismantled, recycled, or disposed of in compliance with applicable regulations. Reusable components will be reconditioned or recycled for future use. The buildings will be demolished (the foundation will be broken up), and disposed of properly, or ownership will be transferred to the government for other potential uses. The land surface will be recontoured and appropriate vegetation will be planted to prevent soil erosion.

## **8.3.3 Marine Terminal and Offshore Structures**

### **8.3.3.1 Subsea Pipeline and Riser Facilities**

The subsea pipeline from the shore crossing to the FSO will be cleaned to remove hydrocarbons. The pipeline on the sea floor will be filled with inert material, sealed, and abandoned in place. The actions taken during abandonment will ensure that the subsea pipeline is not a source of oil contamination. To the extent required by the Republic of Cameroon, the riser facilities will be removed and sold for scrap or reused at another location.

### **8.3.3.2 Floating Storage and Offloading Vessel**

The FSO vessel will be drained of cargo and the vapor spaces of the tanks will be blanketed with an inert gas under positive pressure. The vessel and related buoys and moorings will be removed and sold for scrap or reused at another location. Pile foundations for the moorings will be cut at the mudline and the buried portion will be abandoned in place.

### **8.3.4 Infrastructure**

#### **8.3.4.1 Power Plant**

Two potential options are foreseen for the power plant and its associated facilities. One option is that ownership of the facility will be transferred to the Republic of Chad for ultimate integration into the national electric grid. The other option is that the plant will be completely dismantled and removed, and then sold for scrap, recycled, or disposed of properly. Components such as valves, pumps, motors, and instruments will be reconditioned and reused or sold with the approval from the Republic of Chad. If this option is exercised, the land surface will be recontoured and appropriate vegetation will be planted to prevent soil erosion.

#### **8.3.4.2 Airstrips and Associated Structures**

There are two options for the decommissioning of airstrips. The first will be a transfer of its ownership to the appropriate government. The second option is to remove the airstrip and its associated structures, which will involve recycling or reconditioning reusable components for future use with approval from the appropriate government. Remaining components will be properly disposed. If the airstrip and structures are to be removed, the land surface will be recontoured and appropriate vegetation will be planted to prevent soil erosion.

#### **8.3.4.3 Telecommunications Sites and Permanent Storage Yards**

The telecommunications sites, permanent storage yards, and associated structures and fences will be transferred to the appropriate government, or they will be dismantled and removed. Reusable components will be recycled or reconditioned for future use. The land surface will be recontoured and appropriate vegetation will be planted to prevent soil erosion.

#### **8.3.4.4 Road and Railroad Access**

In most cases, roads and railroads utilized by the project are part of the existing infrastructure of the respective countries and no action will be taken. Where a new road adds little or no value to the existing infrastructure, the road will be abandoned and reclaimed.

### **8.4 DISPOSAL OF CONTAMINATED MATERIALS AND RESIDUES**

Each site with the potential for hydrocarbon contamination will be identified, characterized, and assessed for contamination. Contaminated soils will be removed and replaced with clean fill, or remediated in place in accordance with applicable regulations and standard industry practices in place at the time of actual decommissioning. Remediation and/or treatment methods will be selected based on proven and effective technologies that will minimize or eliminate the potential for further contamination of the environment.

Containers such as empty drums, portable tanks, and storage bins will be returned to vendors; cleaned and recycled; cleaned and crushed for scrap; or landfilled. Fluids and/or sludge from process vessels, storage tanks, and the pipeline will be recovered and properly disposed. Any hazardous materials will be packaged, labeled, and taken to the project's hazardous waste facility for disposal. Project solid waste landfills will comply with a final closure plan.

## **8.5 RESPONSIBILITY AND MONITORING**

### **8.5.1 Chad**

Decommissioning activities and facilitating the funding of those activities will be the obligation and responsibility of TOTCO for the pipeline and pump station and EEPIC for the field production facilities. Decommissioning work itself will be performed by one or more contractors working under the direct supervision of EEPIC/TOTCO. EEPIC/TOTCO will be responsible for monitoring the environmental and socioeconomic aspects of the decommissioning effort. The monitoring will occur throughout the project's decommissioning phase. EEPIC/TOTCO environmental specialists and/or independent consultants may be called in periodically to audit the environmental components of the decommissioning effort.

Appropriate officials from the Republic of Chad will be responsible for monitoring the project's decommissioning work to verify its compliance with applicable regulatory requirements and the terms and conditions contained in the project's legal documents.

### **8.5.2 Cameroon**

Decommissioning activities and facilitating the funding of those activities will be the obligation and responsibility of COTCO. Decommissioning work itself will be performed by one or more contractors working under the direct supervision of COTCO. COTCO will be responsible for monitoring the environmental and socioeconomic aspects of the decommissioning effort. The monitoring will occur throughout the project's decommissioning phase. COTCO environmental specialists and/or independent consultants may be called in periodically to audit the environmental components of the decommissioning effort.

Appropriate officials from the Republic of Cameroon will be responsible for monitoring the project's decommissioning work to verify its compliance with applicable regulatory requirements and the terms and conditions contained in the project's legal documents.