SPECIFICATIONS OF VIDEO INSPECTION & RECORDING EQUIPMENT PUSH ROD CAMERA (CCTV)

GENEYE

1) **General :** The Diagnostic Video Camera System for internal inspection of various Pipelines shall be portable, lightweight, built with the highest quality materials and component systems. The camera system should provide the best picture quality and be very durable and maneuverable so that routine staff can also use the system without extensive training. The general capacity & run as follows:-

Pipeline Capacity :   50 mm – 300 mm diameter

Maximum run   :   100 meters

Operating depth   :   350 ft (150 psi)

(2) **Mechanical : a) The Camera Head** should be as small as possible so that it can inserted into a pipe through minimum possible opening. It should however be not greater than :

Diameter   :   43 mm

Length   :   69 mm

Casing material   :   Hardened Stainless Steel

Front Lens Port   :   Since the camera is expected to get past a number of hard objects and also rough handling at sites, the front lens port should be made of a material which is tough and scratch resistant. Preference would be give to units with Camera heads having Sapphire Crystal lens port for protection. Camera with glass ports would not be accepted.

The Camera head should be waterproof since it is to be used inside of the water lines. Manufacturer to certify that Camera head pressure tested to minimum of 100 mm of water column pressure. The Camera head should be mounted on a spring assembly to allow flexibility of the head movement and there should be a smooth transition to the Push Cable.

b) **Lighting :** The camera should have its own lighting arrangement, preferably a minimum of 21 ultra bright LED's 42000 Mcd bright to light up the insides of pipe for proper viewing. The monitor control panel must have "Variable Intensity Control" to vary the intensity of light emitted by LED's.

c) **The Push Cable assembly** should be made out of suitable Fiberglass rod to carry the video and power cables inside. Push cables must have inner metal and Kevlar braids to hold wires together and also provide long life with repeated use. The complete length of push cable should be housed in a dent and rust proof molded drum. The drum should be mounted on a suitable frame with wheels for easy mobility. The drum shall have lifting handles & recoiling shall be very easy & smooth.

3] a) Video: The details of video are as follows :-

Image Sensor	:	1/3" format, Interline transfer, CCD
Number of Pixels	:	768 (Horizontal) x 494 (Vertical)
Resolution (TV lines)	:	570 (Horizontal) x 495 (Vertical)
Sensitivity	:	.3 Lux
Video Format	:	PAL Standard
Power Supply	:	230 Volts AC, 50 c/s, single phase.

b) **Monitor :** Resolution TV Lines : Minimum 9" screen, color monitor with resolution greater than 450 lines.
The unit should have together with a monitor a separate commercial grade VCR with a facility for "hands free" audio recording, with all the standard facilities.

c) **Display :** There should be provision to display and record the distance that the camera has traversed into pipe, time and date (4 digit year format a must) and also arrangement to type brief text.
All the above shall be assembled firmly held & housed in a non- breakable & lockable dent and rust proof molded box, which shall be having a lid for opening & a stand a secure it after opening. It shall also have lifting handles. There shall be provision to access all the units easily for operation and maintenance purposes. A proper arrangement for power supply plug in shall be made.

TRAINING: -

The successful bidder shall arrange at his own cost to train client's operators for operating and maintaining the unit. The training period shall be 2 days.

TESTING AND INSPECTION: -

(i)   Tests on equipment at manufacturer's premises as required will be carried out in accordance with the manufacturer standard. All inspection, examination and testing shall be carried out in presence of the Engineer's representative in accordance with the specification.

(ii)   If the Engineer's Representative witnesses a test, he shall be given a copy of the test results and certificates, upon request.