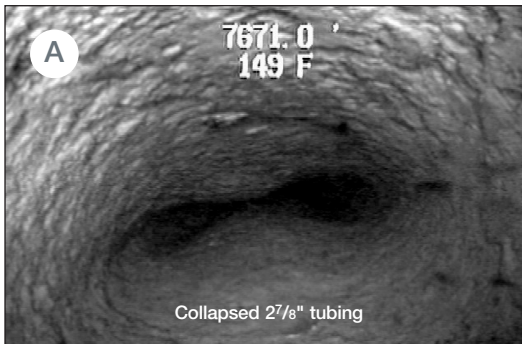


Slickline Memory Camera

The slickline memory camera enables operators to obtain downhole images on slickline when the cost or logistics of mobilising an electric line unit or fibre optic unit are prohibitive. This tool is time programmable and captures 2,200 images per trip and can be programmed for three separate image intervals. It is designed to view many of the same mechanical inspection applications as the HawkEye III e-line camera but it is best used for viewing a single obstruction, restriction, fish, or hole.

The tool has provided excellent results in a diverse set of circumstances. The operator can program the tool to take all 2,200 pictures consecutively or program the tool to selectively take pictures at three distinct time intervals.



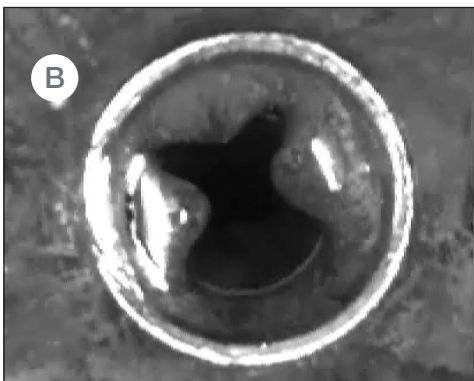
Impression blocks from this well in the Gulf of Mexico indicated collapsed 27/8" (73mm) tubing. If the tubing was collapsed, a workover rig would be required. Before making that investment, the operator sought additional confirmation.

Seeking to keep costs to a minimum, the operator deployed the Slickline Memory Camera since it would not require an e-line unit to run. The camera gave absolute confirmation that the tubing was collapsed (see photo A).

Slickline memory camera radial array lighthead



Applications:		Benefits:
Fishing Aid	Obstruction	Highly portable & mobile downhole camera
Casing Inspection	Restriction	2,200 images per run captured every 1/2 second
Splits/Parts	Windows	Radial Array Lighthead eliminates all shadows
Collapse	Gas Lift Valves	Operates on conventional slickline cable
Scale	SCSSV Valves	Surveys wells with H ₂ S or CO ₂
Corrosion	Liner tops	Views mechanical problems



An operator encountered an obstruction just above a subsurface safety valve. Initial attempts to jar through were unsuccessful. The camera showed that the inside of the valve body had collapsed probably due to excessive pressure on the control line. A string mill was used to get through the collapse. The operator then cut and replaced the valve and put the well back on production (see photo B+C).

Slickline Memory Camera



Surface Equipment

The Program Panel is used to set the delay time for the tool before the survey and then retrieve images via the memory module after the survey.

A laptop computer saves the JPEG images to CD. Images can easily be emailed from location.

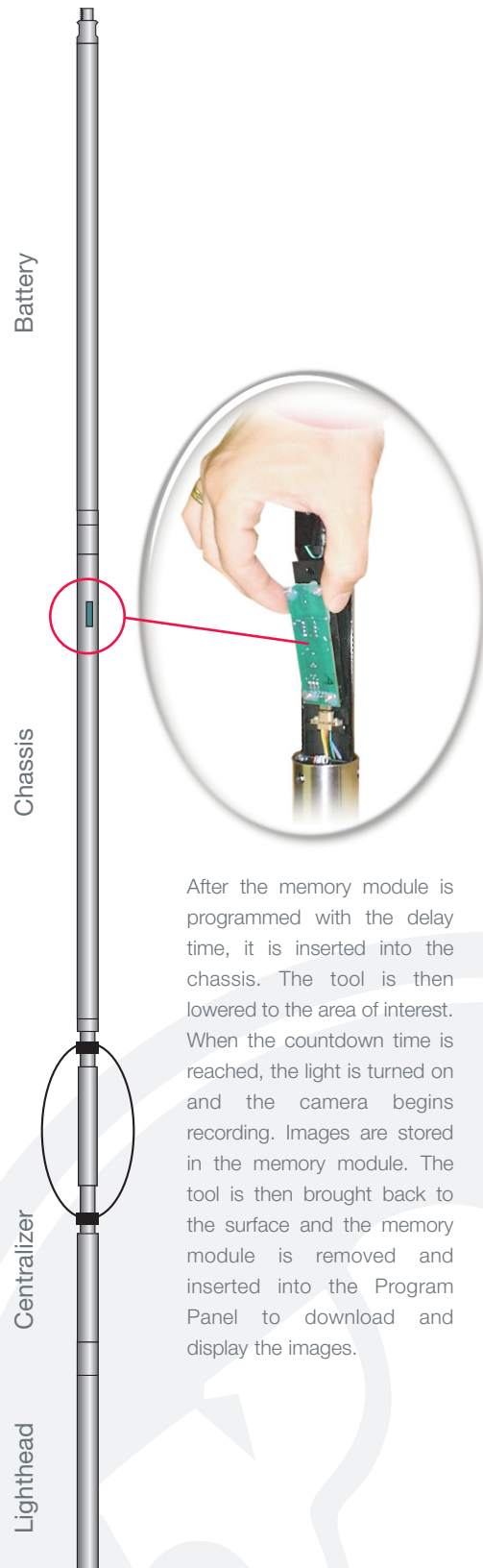
Technical Specifications:

Tool O.D.	1 ¹¹ / ₁₆ " (43 mm)
Max. Temp	225°F (107°C)
Max. Pressure	10,000 psi (69 MPa)
Tool Length	161" (4.09 m)
Tool Weight	58 lbs (26 kg)



Easy to transport

All of the equipment can be easily transported to location. Secure, water-tight containers protect the equipment in transit.



After the memory module is programmed with the delay time, it is inserted into the chassis. The tool is then lowered to the area of interest. When the countdown time is reached, the light is turned on and the camera begins recording. Images are stored in the memory module. The tool is then brought back to the surface and the memory module is removed and inserted into the Program Panel to download and display the images.