DCMS™
Downhole Corrosion Monitoring System

- Records Corrosion Rate and Temperature Data
- Establishes Effectiveness of Corrosion Inhibitor Treatments
- Rated to 10,000 psi and 302°F (150°C)
- Setting and Retrieval at any Depth
- Battery life of 90 Days
- Easy Download and Graphing of Data via CORRDATA® II Software
- Available for Purchase or Rental

The newly re-designed DCMS Downhole Corrosion Monitoring System provides continuous corrosion history of downhole tubing. The DCMS™ tool is another RCS innovation, and the only tool available which provides recorded corrosion and temperature data for the hostile conditions of downhole operation. The sensitivity of the system enables the film persistence of inhibitors to be evaluated in actual operating conditions, something that was not possible prior to the development of the DCMS™.

The DCMS™ tool may be attached to a variety of wireline approved running tools for insertion into the production well at the start of testing and retrieval from the well at the end of the testing period. The DCMS™ tool can be set at any required depth — wherever the most critical corrosion regions are located. Several DCMS™ tools may be run simultaneously in a well, in order to obtain corrosion data for the different depths, while under the same operating conditions.

The DCMS™ tool is comprised of a CORROSOMETER® probe, an electronic memory module and a battery pack. The body of the DCMS™ tool is a 17-4 PH stainless steel body treated to satisfy NACE MR0175 requirements. The body has a 1.25" OD with a 5/8" sucker rod connection for attachment to the wireline-run tubing hanger or lock. The design of the tool permits operation up to 10,000 psi and 302 °F (150 °C). The electronic module is powered by a lithium battery pack that will provide more than 90 days of data, when programmed to read once every two hours. Even if the tool is left in the well beyond the battery life, the non-volatile memory protects the recorded data. The probe sampling interval of 1 hour, 2 hours, or 4 hours may be selected as required to fit within the 1,024 reading storage capacity for the run time in the well. The probe measurement element, which is usually made of carbon steel, is electrically isolated from the DCMS™ tool body, to prevent galvanic action between the probe body and the probe element.

An optional coupon holder assembly consisting of up to nine metal loss strip, pre-stressed or tensile coupons for subsequent analysis of material degradation due to pitting and stress corrosion cracking, can be attached to the sucker rod connection of the Downhole Tool. It also acts a secondary corrosion rate measurement to compare with the ER probe measurement.

After retrieval from the well, the data is downloaded from the DCMS™ tool via a PC running CORRDATA® II Software. On the PC, the corrosion and temperature data is presented in a graph format which can be easily analyzed for identification of the real time corrosion characteristics.
The DCMS system consists of the following:

Downhole Tool (includes one 724050-T20-K03005 probe)  
Corrdata II Software  
DHT Communications Adapter  
Battery De-passivation Instrument  
Probe Monitor Instrument  
DCHA Downhole Coupon Holder Assembly (optional)

DCHA Downhole Coupon Holder Assembly is available for use by itself or in conjunction with the DCMS Downhole Tool. The coupon holder accommodates up to nine coupon holder assemblies. Coupon holders are available for stressed and unstressed strip coupons and cylindrical tensile test specimens for subsequent analysis. The coupons are typically made out of the same material as the downhole tubing. Coupons are available in the most common tubing types, including J55, L80, and N80. They are also available in other common alloys. When used with the Downhole Tool, the coupon holder attaches to the sucker rod connection of the Downhole Tool. The metal loss coupons provide both evidence of general and localized (pitting) corrosion. It also acts a secondary corrosion rate measurement to compare with the ER probe measurement. See DCHA Data Sheet for further details and ordering information.

Specifications:

Probe Spans: T10 - 5 mils, T20 - 10 mils  
Resolution: 0.1% of Probe Span  
Power Source: Lithium battery  
Typical Battery Life: 90 days, reading once every 2 hours  
Maximum Operating Pressure: 10,000 psi (69 MPa) Maximum  
Maximum Operating Temperature: 302°F (150°C)  
Memory Capacity: 1024 Measurements  
Shock Tested: 3 axes, 25g, 11mS pulses  
Vibration Tested: 20-50Hz, 50 m/S², 30 min each axis  
Measurement Intervals: 1, 2 or 4 hours  
DCMS Weight: 30 lbs. (13.6 kg)
Installation, Setting, and Retrieval of DCMS Tool: Wireline Running Tools

With the appropriate wireline tools the DCMS tool can be set easily at any required depth. Customers may use their own preferred wireline company for running tools and DCMS installation and removal. RCS can provide requirements for the necessary soft setting tools and required running procedures. Alternatively RCS can provide the necessary running tools as shown below. The following four sets of running tools are recommended for the insertion, setting, and retrieval of the DCMS tool. All four sets of wireline tool strings consists of Rope Socket (a means of connecting the wireline to the tool string), Stem (sinker bar used for weight used during setting and retrieving the tool), Knuckle Joint (for flexibility), Spang Link Jars (to provide controlled hammering effect by upward or downward movement), and Centraliser (keeps tool string in the center of the tubing).

Gauge Ring (Cutter) Running Tools
The set of Gauge Ring Running Tools are used prior to installation of the DCMS Tool. The Gauge Ring tool is used to gauge the I.D. of the tubing and to make sure there are no obstructions in the tubing down to the depth where the tool will be set. It may also be used to remove paraffin that may have accumulated on the inner diameter of the tubing.

DCMS Wireline Running and Setting Tools
This set of tools is used to lower and set the DCMS tool into position. The Hydrochron Release and Setting Tool hydraulically sets and releases the Downhole tool. Once the Downhole tool is lowered to the appropriate depth, it is locked in place and then released by the hydrochron tool. A separate tool string shown is used to retrieve the DCMS tool.
Installed DCMS Tool String
This Installed DCMS tool string is connected to the DCMS Tool by a 5/8” sucker rod connection. An optional Coupon Holder Assembly that holds up to 12 Strip Coupons may be attached to the Downhole tool for additional metal loss measurements. The Plunk Whiskered Bomb Hanger shown to the right suspends the Downhole Tool inside the diameter of the tubing. It contains a set of dog grabs, engaging the tubing to prevent any upward or downward movement, assuring the Downhole Tool stays in place. The Plunk Hanger Safety Tool contains a second pair of dog grabs and as backup in case there is any loss of line tension during installation.

DCMS Wireline Retrieving String
The DCMS Wireline Retrieving String is used for the retrieval of the DCMS tool. The tool string is lowered into the downhole tubing until the pulling tool latches onto the Plunk Soft Release Sub that acts as a connector between the tool and retrieval tool string. The JDC Pulling Tool has dogs grabs that latch over the fishing neck of the Plunk Soft Release Sub. Once the retrieving string is securely in place, the DCMS tool is disengaged from the tubing and pulled to the surface.
### Ordering Information:

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>724120</td>
<td>Complete Downhole Corrosion Monitoring Kit</td>
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<tr>
<td>724121</td>
<td>DCMS Support Tool Kit</td>
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### Replacement Parts and Accessories

<table>
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<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>724089</td>
<td>Battery Assembly – Downhole Probe 7.4 g Lithium -40 TO +150 deg C</td>
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<tr>
<td>724050-T10-K03005</td>
<td>Downhole Probe w/Carbon Steel Element</td>
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<tr>
<td>724050-T10-S31600</td>
<td>Downhole Probe w/316 SS Element</td>
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<tr>
<td>724050-T10-S31603</td>
<td>Downhole Probe w/316L SS Element</td>
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<tr>
<td>724050-T20-K03005</td>
<td>Downhole Probe w/Carbon Steel Element</td>
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<td>Downhole Probe w/316 SS Element</td>
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<tr>
<td>724050-T20-S31603</td>
<td>Downhole Probe w/316L SS Element</td>
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<tr>
<td>724082</td>
<td>O-Ring Kit</td>
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### Wireline Tools

<table>
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<tr>
<th>Part Number</th>
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<tr>
<td>724141-1*</td>
<td>Optional Soft Set Running Tools (Not pipe size dependent)</td>
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<tr>
<td>724141-2</td>
<td>Optional Soft Set Running Tools - 2.375&quot;</td>
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<tr>
<td>724141-3</td>
<td>Optional Soft Set Running Tools - 2.875&quot;</td>
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<tr>
<td>724141-4</td>
<td>Optional Soft Set Running Tools - 3.5&quot;</td>
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*Part number 724141-1 is required for all pipe sizes to complete all four wireline strings. Next choose one of the other options (724141-2, 724141-3, 724141-4) to match internal pipe size diameter.