

Incident Assessment

Afton WTW Coagulation Failure 9 December 2012

DWQR Inspector:
William Byers

Summary of Incident

On 16 December, the standby operator was alerted to low pH at the main storage point supplied from Afton treatment works. This led to the discovery that the telemetry communications between the works and the Control Centre had failed. The operator attended the works to investigate and found the lime dosing plant system was blocked causing the coagulation process to fail and also failing to adjust the final water pH. As a consequence, levels of Aluminium in the final supply rose, peaking at 1260µg/l. The treatment works was shut down, the blocked lines cleared and the works restarted with production flows diverted until a stable quality could be achieved. A programme of flushing was carried out in the water supply network to clear the system of high levels of Aluminium.

DWQR Assessment of Cause of Incident

The cause of the incident is a blockage within the lime dosing plant. Whilst this would normally be expected to be rectified and mitigation actions commenced by staff within a short timescale, the situation was aggravated by the failure of the alarm system to provide the necessary alert. This event was linked to another situation occurring on 9 December when a problem with the power supply affecting the Uninterrupted Power Supply (UPS) unit and causing the loss of power to all process control lines, including lime dosing. The fault also caused the control to switch from the master Process Logic Controller (PLC) to the standby PLC. Whilst this has fully functioning control of the processes, the telemetry function cannot transfer automatically and depends upon the physical transfer of a cable connector from one PLC to the other. There is no obvious indicator however to alert staff to the fact the PLCs had switched duty and the need to transfer telemetry communication duty was missed. Whilst within the works, process alarms and controls were in place, they could not be relayed to the telemetry outstation and control centre.

DWQR Assessment of Actions Taken by Scottish Water

DWQR is satisfied that Scottish Water took the necessary actions to recover the treatment process and to expel water with high Aluminium levels from the water supply network. Staff also carried out a sampling programme to monitor water quality across the supply area. Scottish Water has plans in place to upgrade the SCADA at the site which will deal automatically with telemetry handover and remove the necessity for physical transfer of a communications cable.

Scottish Water has identified four actions from the incident. DWQR accepts that these are appropriate and will be monitoring to ensure they are completed prior to signing off the incident. In addition, DWQR made three recommendations following this incident.