

Invercannie WTW Treatment Failure 8th July 2010

DWQR Inspector:
John Littlejohn

Summary of Incident

On 8th July 2010 at 1614hrs there was a short duration power failure (under 30 seconds) which caused the coagulation chemical (polyaluminium chloride (PACL)) pumps to fail. When the power resumed the pumps did not restart. Also the chlorine dosing control system was arranged in such a way that it did not detect the effect of the loss of coagulation, and therefore did not increase the quantity of chlorine to the water to compensate for the reduction in quality. To compound the problem telemetry alarms were not generated from the site with the result the deterioration in water quality was not detected until operatives arrived on site the following morning at 0800hrs. The overall water quality effect of these deficiencies was that water with lower than normal chlorine residual and higher than normal colour values passed into supply for approximately 18 hours until normal quality was restored on the morning of 9th July.

DWQR Assessment of Cause of Incident

Once the operatives were aware of the problem they acted in a prompt and appropriate manner. Extensive sampling in the distribution system showed that, while in some instances the chlorine residual was lower than usual, bacteriological quality had been maintained throughout the incident. Regular contact was maintained throughout the incident with Grampian NHS and Aberdeenshire Council.

DWQR Assessment of Actions Taken by Scottish Water

Scottish Water's action to prevent a repeat of this incident focused on the reasons why the coagulant pumps failed to restart and why the works did not alarm out the failures as they occurred. DWQR audited the works on 18th August 2010 and found that all actions in these areas had been completed.

Scottish Water has identified a number of actions from this incident. DWQR accepts that these are appropriate and will be monitoring to ensure they are completed prior to signing off the incident:

Action Number	Action Description	Completion Date
1	Investigate why the PACL dosing system did not automatically reset after mains power failure.	Complete
2	Test mains power failure scenarios on full plant, i.e. mains power dip and full mains power failure.	Complete
3	Investigate why no telemetry alarms were sent from site to the OMC when the telemetry comms were in a healthy state.	Complete
4	Amend and test Post Chlorine cascade control system to ensure it responds to changes in raw water quality. Move control flow meter from aqueduct to membrane outlet.	Complete
5	Install alarm system on SCADA for early warning of failure of cascade control system.	Complete
6	Increase timer settings above 30secs on SCADA for 'catchpot high' and 'pressure high' conditions.	Complete
7	Ensure inlet valve winds open and closed via rotork to allow 'failsafe' closure and ensure valve trip triggers an alarm.	Complete
8	Install and test control loop to ensure 'failsafe' conditions i.e. inlet valve closes if both coagulation or both pH dosing pumps are not available.	Complete
9	Request corporate report detailing outstanding critical E&M / ICAT tasks.	Complete
10	Review the DWSP with respect to this incident and amend if necessary.	Complete
11	Water Operations Manager to Circulate the Final Report to all other Water Operations Managers.	Complete