BRISBANE WATER

Network Control Systems

SITE ACCEPTANCE TEST (SAT)

TEST DOCUMENT (On Site)

SPSV3 - Sewage Pumping Station

Submersible 3 Pumps With VFD

Project & Commissioning Details

Date Commissioned	
Project Manager	
Construction Manager	
Electrical Inspector	
RTU Programmer	
Electricians	

IDTS COMMISSIONING TEST SHEET

The purpose of these tests is to confirm that the new RTU is running and responding to inputs and sending data back to the IDTS master station.

- Notify Control Room that site is being commissioned - ph 340 78414
- Contact IDTS Test Room ph 3407 8477 to confirm receipt of alarms

IDTS COMMISSIONING TEST SHEET

Action	Observation	Result
Site in remote mode Switch on RTU power	Confirm that RTU ABNORMAL OPERATION alarm is received by IDTS Confirm that operator ajustable alarm setpoints are downloaded on RTU restart.	□ Yes □ Yes
Cycle the mains power	Confirm that SITE POWER MAINS FAIL alarm is received by IDTS and no other alarms [alarm suppression] are sent	□ Yes
Switch off RTU mains power	Confirm that RTU MAINS FAIL alarm is received by IDTS	□ Yes
Trigger RTU Battery Low alarm	Confirm alarm is received by IDTS	□ OK
Test operation of all pumps in REMOTE mode (Manual)	Each pump starts and stops when commanded by the IDTS picture controls	□ OK
Activate the probe itself to produce the surcharge imminent alarm.	Confirm that 2 pumps start	□ Yes
	Confirm that SURCHARGE IMMINENT alarm is received by IDTS	□ Yes
Switch site to LOCAL and STOP pumps Wait until surcharge pumping timer expires (Record Time)	Confirm that LOCAL mode alarm is received by IDTS	□ Yes
Test operation of all pumps in LOCAL mode	Each pump starts and stops when commanded by the site pushbuttons	□ OK
Switch off RTU Test operation of both pumps in LOCAL mode with RTU failed.	Each pump starts and stops when commanded by the site pushbuttons	□ OK
Site in Remote mode, RTU operating Test operation of the pump inhibit	Apply pump inhibit to each pump and confirm that “station inhibit” is active	□ OK
Fault Pump 1 *Note: not every point that causes an availability alarm is tested, as this linkage is proved by SPSS2 standard code and FAT of switchboard*	Confirm Availability alarm is received by IDTS. Look at the points page and confirm the reason for the fault. Send a remote reset to clear the fault	□ OK □ OK □ OK
Fault Pump 2	Confirm Availability alarm is received by IDTS. Look at the points page and confirm the reason for the fault. Send a remte reset to clear the fault	□ OK □ OK □ OK
Fault Pump 3	Confirm Availability alarm is received by IDTS. Look at the points page and confirm the reason for the fault. Send a remte reset to clear the fault	□ OK □ OK □ OK

Action	Observation	Result
Trigger Wet Well Surcharge Occurring Alarm	Confirm alarm is received by IDTS	□ OK
Trigger Wet Well High alarm	Confirm alarm is received by IDTS	□ OK
Trigger Wet Well Invalid Alarm	Confirm alarm is received by IDTS	□ OK
Allow well to fill.	Observe that the duty pump starts and stops. Only need to test for 1 pump on a slow filling site.	□ Yes
	Confirm that IDTS is receiving the correct wet well level (%).	□ Yes
Pump start and stop values shown on the wet well label match the IDTS picture	Duty A start .....% Duty A stop .....%	
After several hours operation, Check trending	Wet well level	□ OK
	Wet well inflow Is the value realistic?	□ OK
	Estimated time to surcharge Is the value realistic?	□ OK
	Running Indication Received?	□ OK
	Pump current for each pump	□ OK

Site FAT by (RTU Programmer)

Name: …… ……

Signature: …… ……

Date: …… ……

Pre-commissioning Test Sheet checked by NCS Project Officer

Name: …… ……

Signature: …… ……

Date: …… ……

PID TUNING

SP: _ _ _

LOCATION: _____

This test can only be carried out if the inflow to the station is greater than the flow that one pump produces at minimum speed. The tuning of the loops should be rechecked after a 24 hour period (on trending) to ensure the station operates correctly over the varying flows during the day.

LOOP 3 – WET WELL LEVEL → PUMP SPEED

Action	Observation	Result
Level reaches the Duty A start level	• Pump runs at minimum speed • Wet well will continue to rise	□ Yes □ Yes
Level reaches the PID set point level and continues to rise	• Pump speed will increase in a controlled manner until the level starts to fall. • Over time the should drop to the PID set point.	□ Yes
Level falls below the PID set point level	• Pump speed will reduce in an attempt to maintain the PID set point level.	□ Yes
Check the trending of the site.	• Overall the pump speed should change in a controlled maner. • The wet well level should be fairly constant, around the PID set point. • Unless the inflow to the site is greater than the flow of one pump running at max speed, the station should only run one pump – the speed should change quickly enough to avoid the starting of the second pump.	□ Yes
PID CONSTANTS RECORDED IN INIT BLOCK	• Once the PID loop has been tuned, all constants in the INIT block must be recorded (ie the init value should equal the current value) so that the loop is tuned on the code as well as the running program.	□ Yes

Site FAT by (RTU Programmer)

Name: …… ……

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LOOP 1 & 2 – CASCADED - WET WELL LEVEL → FLOW → PUMP SPEED

Action	Observation	Result
Level reaches the Duty A start level	• PID Loop 1 will request the minimum flow. • PID Loop 2 will run the pump at minimum speed and will increase the speed if the minimum flow is not achieved. (It should be close tho). • Wet well will continue to rise	□ Yes □ Yes □ Yes
Level reaches the PID set point level and continues to rise	• PID Loop 1 will increase the flow set point. • PID Loop 2 will increase the pump speed to achieve the new flow SP. • The pump speed increases in a controlled manner, the level will eventually start to fall. • Over time the well level should drop to the PID set point.	□ Yes □ Yes □ Yes □ Yes
Level falls below the PID set point level	• PID Loop 1 will decrease the flow set point. • PID Loop 2 will decrease the pump speed to achieve the new flow SP	□ Yes □ Yes
Check the trending of the site.	• Overall the flow SP and the pump speed should change in a controlled maner. • The flow should be stable, with no large variations over a small time period. A steady increase/decrease is what is desired. • The wet well level should be fairly constant, around the PID set point. • Unless the inflow to the site is greater than the flow of one pump running at max speed, the station should only run one pump – the flow SP, and thus the speed, should change quickly enough to avoid the starting of the second pump. (Must be balaced with the previous condition)	□ Yes □ Yes □ Yes □ Yes
PID CONSTANTS RECORDED IN INIT BLOCK	• Once the PID loop has been tuned, all constants in the INIT block must be recorded (ie the init value should equal the current value) so that the loop is tuned on the code as well as the running program.	□ Yes

Site FAT by (RTU Programmer)

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