#### PHOS alarms and ALICE DCS operator's instruction.

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Description of PHOS alarm messages and recommendation to ALICE DCS operator and PHOS on call expert to do if alarm appears.

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### **1.** Alidcscom072 phs\_top PVSS project doesn't respond correct.

Name	Alidcscom072 phs_top PVSS project doesn't respond correct.
Condition	False - Connection to alidcscom072 failure.
PVSS priority	40
Description	"Warning" Some datapoints of phs_top PVSS project on alidcscom072 computer doesn't respond for a long period of time.
Operator's instruction	Do nothing.
PHOS expert's instruction	Go to PHS_DCS GUI, open "Data valid" panel on the right bottom side of GUI window, wait for 15 seconds, inform the DCS expert on red squares in this panel.

#### 2. Alidcscom073 phs\_pws PVSS project doesn't respond correct.

Name	Alidcscom073 phs_pws PVSS project doesn't respond correct.
Condition	False - Connection to alidcscom073 failure.
PVSS priority	40
Description	"Warning" Some datapoints of phs_pws PVSS project on alidcscom073 computer doesn't respond for a long period of time.
Operator's instruction	Do nothing.
PHOS expert's instruction	Go to PHS_DCS GUI, open "Data valid" panel on the right bottom side of GUI window, wait for 15 seconds, inform the DCS expert on red squares in this panel.

#### 3. Alidcscom074 phs\_col PVSS project doesn't respond correct.

Name	Alidcscom074 phs_col PVSS project doesn't respond correct.
Condition	False - Connection to alidcscom074 failure.
PVSS priority	40
Description	"Warning" Some datapoints of phs_col PVSS project on alidcscom074 computer doesn't respond for a long period of time.
Operator's instruction	Do nothing.
PHOS expert's instruction	Go to PHS_DCS GUI, open "Data valid" panel on the right bottom side of GUI window, wait for 15 seconds, inform the DCS expert on red squares in this panel.

#### 4. Humidity level inside the "warm" volume of PHOS module.

Name	Humidity level inside the "warm" volume of PHOS module.
Condition	40-50% - Humidity level inside the "warm" volume is high.
	50-60% - Humidity level inside the "warm" volume is very high.

	> 60% - Humidity level inside the "warm" volume is extremely high.
PVSS priority	40
	60
	80
	"Warning" Humidity level inside the "warm" volume of PHOS module is
	high.
Description	"Error" Humidity level inside the "warm" volume of PHOS module is very
Description	high.
	"Fatal" Humidity level inside the "warm" volume of PHOS module is
	extremely high. Danger of HV trip.
	If status=WENT do nothing.
	Otherwise: inform PHOS expert oncall. If alarm's level is "Error" and
	detector is in READY state, open PHS_DCS FSM control panel, then
Operator's	PHS_PWS_TOP, send "GO_INT" command for alarmed module. Check if
instruction	HV of chosen module is ramping down. If alarm's level is "Fatal" or detector
	is in not in READY state, go to PHS_DCS GUI, click on "HV emergency
	stop" button on the left top side of the window, choose alarmed module and
	click "Yes". Check if HV is ramping down.
PHOS expert's	Switch off HV of alarmed PHOS module. Watch over humidity level of
instruction	alarmed PHOS module. Do not start HV while alarm's status=CAME.

### 5. Humidity level inside the "cold" volume of PHOS module.

Name	Humidity level inside the "cold" volume of PHOS module.
Condition	70-80% - Humidity level inside the "cold" volume is high.
	80-85% - Humidity level inside the "cold" volume is very high.
	>85% - Humidity level inside the "cold" volume is extremely high.
	40
PVSS priority	60
	80
	"Warning" Humidity level inside the "cold" volume of PHOS module is
	high.
Description	"Error" Humidity level inside the "cold" volume of PHOS module is very
Description	high.
	"Fatal" Humidity level inside the "cold" volume of PHOS module is
	extremely high.
Operator's	If status=WENT do nothing.
instruction	Otherwise: if alarm's level is "Error", inform PHOS expert oncall.
PHOS expert's	Watch over "cold" volume humidity level of alarmed PHOS module. Be
instruction	ready to stop the power of alarmed PHOS module.

### 6. Matrix cooling plant hardware interlock triggered.

Name	Matrix cooling plant hardware interlock triggered.
Condition	True - Matrix cooling plant hardware interlock triggered.
PVSS priority	100
Description	"Fatal" Matrix cooling plant hardware interlock triggered. Low voltage Wiener crates blocked.
Operator's	If status=WENT, unblock PHOS low voltage Wiener crates.

instruction	Otherwise: inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the status of PHOS matrix cooling plant. Stop HV of all PHOS modules if it wasn't stopped by software HV-LV interlock. Watch over "warm" and "cold" volumes temperature level of all PHOS modules. Contact DCS expert and matrix cooling plant experts immediately. Ask DCS shifter to unblock low voltage crates when the status of alarm be "WENT". Restart the power of all PHOS modules. Inform PHOS community on happened incident.

#### 7. PHOS low voltage hardware interlock triggered.

Name	PHOS low voltage hardware interlock triggered.
Condition	True - Wiener LV hardware interlock triggered. Wiener crates were blocked.
PVSS priority	100
Description	"Fatal" PHOS low voltage hardware interlock triggered. Low voltage Wiener
	crates blocked.
Operator's	If status=WENT, unblock PHOS low voltage crates.
instruction	Inform PHOS expert oncall immediately.
PHOS expert's instruction	You must understand what was the aim of blocked LV crates: error of PHOS
	matrix cooling plant or water cooling plant. Read the description of another
	PHOS alarm, which came in the same time with existing one.

#### 8. PHOS water cooling hardware interlock triggered.

Name	PHOS water cooling hardware interlock triggered.
Condition	True - Water cooling plant - power supply hardware interlock triggered.
PVSS priority	100
Description	"Fatal" Water Cooling hardware interlock triggered. PHOS low voltage
	Wiener crates blocked.
Operator's	If status=WENT, unblock PHOS low voltage Wiener crates.
instruction	Otherwise: check the status of PHOS, TOF, EMCAL and CPV common
	water cooling plant, inform PHOS expert oncall immediately.
	Check the status of water cooling temperature and pressure. Stop HV of all
	PHOS modules if it wasn't stopped by HV-LV software interlock. Watch
PHOS expert's	over "warm" volume temperature level of all PHOS modules. Ask DCS
instruction	shifter to unblock low voltage crates when the status of alarm is "WENT".
	Restart the power of all PHOS modules. Inform PHOS community on
	happened incident.

### 9. PHOS matrix cooling plant - high voltage software interlock triggered.

Name	PHOS matrix cooling plant - high voltage software interlock triggered.
Condition	True - Matrix cooling plant - high voltage software interlock triggered.
PVSS priority	100
Description	"Fatal" Matrix cooling plant - high voltage software interlock triggered.
	Matrix cooling plant stopped. HV of all PHOS modules ramped down.
Operator's	If status=WENT do nothing.
instruction	Otherwise: check the status of PHOS matrix cooling plant - go to the

	PHS_DCS FSM control panel, check phs_col_top FSM status, inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the status of matrix cooling plant from the main PHOS DCS GUI. Inform matrix cooling plant experts and DCS expert immediately. Check the status of HV for all PHOS modules. Switch it off if it wasn't stopped by HV- LV software interlock. Watch over "cold" and "warm" volumes temperature level of all PHOS modules. When status be "WENT", restart the power of all PHOS modules. Inform PHOS community on happened incident.

## 10. PHOS "warm" volume humidity - power supply software interlock triggered.

Name	PHOS "warm" volume humidity - power supply software interlock triggered.
Condition	True - Humidity – HV software interlock triggered.
PVSS priority	100
Description	"Fatal" PHOS "warm" volume humidity - power supply software interlock
	triggered. All power for appropriate PHOS module is off.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the "warm" volume humidity of appropriate PHOS module. When
	alarm's status is "WENT", restart the power of chosen PHOS module. Inform
	PHOS community on happened incident.

### **11. PHOS high voltage - low voltage software interlock triggered.**

Name	PHOS high voltage - low voltage software interlock triggered.
Condition	True – HV-LV software interlock triggered.
PVSS priority	100
Description	"Fatal" High voltage - low voltage software interlock triggered for PHOS
	module. PHOS module high voltage ramped down.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS expert oncall immediately.
	Check the status of HV and LV of appropriate PHOS module. Stop all HV of
PHOS expert's	this module if it wasn't stopped. When alarm's status be "WENT", restart the
instruction	power of chosen PHOS module. Inform PHOS community on happened
	incident.

## 12. PHOS "warm" volume temperature - power supply software interlock triggered.

Name	PHOS "warm" volume temperature - power supply software interlock triggered.
Condition	True - "Warm" volume temperature - power supply software interlock
PVSS priority	100
Description	"Fatal" PHOS "warm" volume temperature - power supply software interlock triggered. No power for appropriate PHOS module.
Operator's	If status=WENT do nothing.

instruction	Otherwise: inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the "warm" volume temperature of appropriate PHOS module. When alarm's status is "WENT", restart the power of PHOS module. Inform PHOS community on happened incident.

## 13. PHOS cooling water pressure - power supply software interlock triggered.

Name	PHOS cooling water pressure - power supply software interlock triggered.
Condition	True - Cooling water pressure - power supply software interlock triggered.
PVSS priority	100
Description	"Fatal" PHOS cooling water pressure - power supply software interlock
Description	triggered. No power of all PHOS modules.
Operator's instruction	If status=WENT do nothing.
	Otherwise: check the water pressure of PHOS, TOF, EMCAL and CPV
	common water cooling plant, inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the status of water cooling pressure. Check the status of water cooling
	plant. When alarm's status is "WENT", restart the power of all PHOS
	modules. Inform PHOS community on happened incident.

## 14. PHOS Wiener low voltage temperature - power supply software interlock triggered.

Name	PHOS Wiener low voltage temperature - power supply software interlock triggered.
Condition	True – Wiener low voltage temperature - power supply software interlock triggered.
PVSS priority	100
Description	"Fatal">PHOS Wiener low voltage temperature - power supply software interlock triggered. No power for appropriate PHOS module.
Operator's instruction	If status=WENT do nothing. Otherwise: check the status of TOF, CPV, PHOS and EMCAL common water cooling plant, inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the temperature of appropriate Wiener low voltage device. Check the status of TOF, CPV, PHOS and EMCAL common water cooling plant. When alarm's status is "WENT", restart the power of PHOS module. Inform PHOS community on happened incident.

# 15. PHOS "warm" volume dew point – high voltage software interlock triggered.

Name	PHOS "warm" volume dew point – high voltage software interlock triggered.
Condition	True - "Warm" volume dew point – high voltage software interlock
	triggered.
PVSS priority	100
Description	"Fatal" PHOS "warm" volume dew point – high voltage software interlock
	triggereds.
Operator's	If status=WENT do nothing.

instruction	Otherwise: inform PHOS expert oncall immediately.
PHOS expert's instruction	Check the "warm" volume temperature and humidity of appropriate PHOS module. Switch of HV power if required. When alarm's status is "WENT", restart the power of PHOS module. Inform PHOS community on happened incident

## **16. PHOS matrix cooling plant - high voltage software interlock was deactivated.**

Name	PHOS matrix cooling plant - high voltage software interlock was
	deactivated.
Condition	True - Matrix cooling plant – high voltage software interlock was deactivated
	by operator.
PVSS priority	40
Description	"Warning" PHOS matrix cooling plant - high voltage interlock was
	deactivated.
Operator's	
instruction	Do nouning.
PHOS expert's	Make sure there are no current works on PHOS modules and activate the
instruction	appropriate software interlock from the main PHOS DCS GUI.

## 17. PHOS "warm" volume humidity - power supply software interlock was deactivated.

Name	PHOS "warm" volume humidity - power supply software interlock was deactivated.
Condition	True – "Warm" volume humidity – power supply software interlock was deactivated by operator.
PVSS priority	40
Description	"Warning" PHOS "warm" volume humidity - power supply interlock was deactivated.
Operator's instruction	Do nothing.
PHOS expert's instruction	Make sure there are no current works on PHOS modules and activate the appropriate software interlock from the main PHOS DCS GUI.

#### **18. PHOS HV-LV software interlock was deactivated.**

Name	PHOS HV-LV software interlock was deactivated.
Condition	True – HV-LV software interlock was deactivated by operator.
PVSS priority	40
Description	"Warning" PHOS HV-LV interlock was deactivated.
Operator's	Do nothing.
instruction	
PHOS expert's	Make sure there are no current works on PHOS modules and activate the
instruction	appropriate software interlock from the main PHOS DCS GUI.

#### **19. PHOS "warm" volume temperature 0 interlock was deactivated.**

Name	PHOS "warm" volume temperature 0 interlock was deactivated.
Condition	True – "Warm" volume temperature 0 software interlock was deactivated by
	operator.
PVSS priority	40
Description	"Warning" PHOS "warm" volume temperature 0 interlock was deactivated.
Operator's	Do nothing.
instruction	
PHOS expert's	Make sure there are no current works on PHOS modules and activate the
instruction	appropriate software interlock from the main PHOS DCS GUI.

## 20. PHOS "warm" volume temperature - power supply software interlock was deactivated.

Name	PHOS "warm" volume temperature - power supply software interlock was deactivated.
Condition	True – "Warm" volume temperature – power supply software interlock was deactivated by operator.
PVSS priority	40
Description	"Warning" PHOS "warm" volume temperature - power supply interlock was deactivated.
Operator's instruction	Do nothing.
PHOS expert's instruction	Make sure there are no current works on PHOS modules and activate the appropriate software interlock from the main PHOS DCS GUI.

### 21. PHOS "warm" volume dew point – high voltage software interlock was deactivated.

Name	PHOS "warm" volume dew point – high voltage software interlock was deactivated.
Condition	True – "Warm" volume dew point – high voltage software interlock was deactivated by operator.
PVSS priority	40
Description	"Warning" PHOS "warm" volume dew point – high voltage software interlock was deactivated.
Operator's instruction	Do nothing.
PHOS expert's instruction	Make sure there are no current works on PHOS modules and activate the appropriate software interlock from the main PHOS DCS GUI.

### 22. PHOS water cooling pressure - power supply software interlock was deactivated.

Name	PHOS water cooling pressure - power supply interlock was deactivated.
Condition	True – Water cooling pressure – power supply interlock was deactivated by

	operator.
PVSS priority	40
Description	"Warning" PHOS water cooling pressure - power supply interlock was
	deactivated.
Operator's	Do nothing.
instruction	
PHOS expert's	Make sure there are no current works on PHOS modules and activate the
instruction	appropriate software interlock from the main PHOS DCS GUI.

## 23. PHOS Wiener low voltage crate temperature - power supply software interlock was deactivated

Name	PHOS Wiener low voltage crate temperature - power supply software interlock was deactivated
Condition	True – Water cooling temperature – power supply software interlock was deactivated by operator.
PVSS priority	40
Description	"Warning">PHOS Wiener low voltage crate temperature - power supply software interlock was deactivated.
Operator's instruction	Do nothing.
PHOS expert's instruction	Make sure there are no current works on PHOS modules and activate the appropriate software interlock from the main PHOS DCS GUI.

#### 24. PHOS Iseg high voltage crate doesn't respond.

Name	PHOS Iseg high voltage crate doesn't respond.
Condition	False – Iseg high voltage crate doesn't respond.
PVSS priority	40
Description	"Warning" PHOS Iseg high voltage crate doesn't respond.
Operator's instruction	Do nothing.
PHOS expert's instruction	Check the connection with Iseg HV crate from the appropriate panel in the main PHOS DCS GUI. Check if OPC server started on alidcscom073 computer. Inform DCS expert.

#### 25. Current level for Iseg HV device of PHOS module is abnormal.

Name	Current level for Iseg HV device of PHOS module is abnormal.
Condition	>11 – Current of Iseg HV channel is 11 mA.
	>12.5 – Current of Iseg HV channel is 12.5 mA.
	>14 – Current of Iseg HV channel is 14 mA. Danger of trip.
PVSS priority	40
	60
	80
Description	"Warning" Current is higher than usual.
_	"Error" Current is very high. There is a risk of the trip because of
	overcurrent.

	"Fatal" Current is extremely high. There is a high risk of the trip because of
	overcurrent.
	If status=WENT do nothing.
	Otherwise: inform PHOS oncall expert. If alarm's level is "Error" and
	detector is in READY state, open PHS_DCS FSM control panel, then
Operator's	PHS_PWS_TOP, send "GO_INT" command for alarmed module. Check if
instruction	HV of chosen module is ramping down. If alarm's level is "Fatal" or detector
	is in not in READY state, go to PHS_DCS GUI, click on "HV emergency
	stop" button on the left top side of the window, choose alarmed module and
	click "Yes". Check if HV is ramping down.
PHOS expert's instruction	Check the status of HV channel and measurement HV current. If current
	level of HV channel is too high, switch off the HV channel for appropriate
	PHOS module and inform PHOS community.

#### **26. PHOS HV Iseg module doesn't respond.**

Name	PHOS HV Iseg module doesn't respond.
Condition	True – Iseg high voltage module doesn't respond.
PVSS priority	40
Description	"Warning" PHOS HV Iseg module doesn't respond.
Operator's	Do nothing.
instruction	
PHOS expert's	Check the connection to Iseg HV modules from the appropriate panel. Check
instruction	if OPC server started on alidcscom073 computer. Inform DCS expert.

# 27. Temperature and humidity level inside the "warm" volume of PHOS module is close to the dew point.

Name	Temperature and humidity level inside the "warm" volume of PHOS module
	is close to the dew point.
Condition	1 degree – Temperature and humidity is close to the dew point.
PVSS priority	60
Description	"Error" Temperature and humidity level inside the "warm" volume is very
	close to the dew point temperature.
	If status=WENT do nothing.
	Otherwise: inform PHOS oncall expert. If detector is in READY state, open
	PHS_DCS FSM control panel, then PHS_PWS_TOP, send "GO_INT"
Operator's instruction	command for alarmed module. Check if HV of chosen module is ramping
	down. If alarm's level is "Fatal" or detector is in not in READY state, go to
	PHS_DCS GUI, click on "HV emergency stop" button on the left top side of
	the window, choose alarmed module and click "Yes". Check if HV is
	ramping down.
PHOS expert's	Check the current level of humidity and temperature inside the "warm"
instruction	volume of appropriate PHOS module. Switch off HV if required.

## 28. Temperature level inside the "warm" volume of PHOS module is abnormal.

Name	Temperature level inside the "warm" volume of PHOS module is abnormal.
Condition	<ul> <li>&gt; 35 – Temperature inside the "warm" volume of PHOS module is high.</li> <li>&gt; 40 – Temperature inside the "warm" volume of PHOS module is very high.</li> </ul>
	> 45 – Temperature inside the "warm" volume of PHOS module is extremely high.
	40
PVSS priority	60
	80
	"Warning" Temperature level inside the "warm" volume of PHOS module is
	high.
Description	"Error" Temperature level inside the "warm" volume of PHOS module is
	very high.
	"Fatal" Temperature level inside the "warm" volume of PHOS module is
	extremely high. Danger of electronics damage.
Operator's	If status=WENT do nothing.
instruction	Otherwise: Check the status of PHOS, TOF, EMCAL and CPV common
	water cooling plant, inform PHOS oncall expert.
PHOS expert's instruction	Check the current level of temperature inside the "warm" volume of
	appropriate PHOS module. Check the temperature of cooling water. Check
	the status of water cooling plant. Switch off the power of PHOS module if
	temperature is too high.

### **29. PHOS "warm" volume temperature is close to 0 degrees Celsius.**

Name	PHOS "warm" volume temperature is close to 0 degrees Celsius.
Condition	True – "Warm" volume temperature is close to 0 degrees Celsius.
PVSS priority	60
Description	"Error" "Warm" volume temperature is close to 0 degrees Celsius.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS expert oncall immediately.
PHOS expert's	Check the status of matrix cooling plant and temperatures inside "warm"
instruction	volumes. Switch on the power to avoid cooling water freezing.

# 30. Temperature level inside the "cold" volume of PHOS module is abnormal.

Name	Temperature level inside the "cold" volume of PHOS module is abnormal.
	> 25 – Temperature inside the "cold" volume is high.
Condition	> 30 – Temperature inside the "cold" volume is very high.
Condition	> 35 – Temperature inside the "cold" volume is extremely high. Danger of
	crystal damage.
PVSS priority	60
	80
	100
Description	"Error" Temperature level inside the "cold" volume of PHOS module is high.
	"Error" Temperature level inside the "cold" volume of PHOS module is very
	high.
	"Fatal" Temperature level inside the "cold" volume of PHOS module is

	extremely high. Danger of crystal damage.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert immediately.
PHOS expert's	Check the current level of the temperature inside the "cold" volume of
instruction	appropriate PHOS module. Switch off the power if temperature is very high.

### **31. PHOS VME create is off or doesn't respond.**

Name	PHOS VME create is off or doesn't respond.
Condition	False – VME crate is off.
PVSS priority	40
Description	"Warning" PHOS VME crate is off or doesn't respond. It is not possible to take PHOS LED runs.
Operator's instruction	Do nothing.
PHOS expert's instruction	Check the status of VME crate from appropriate window in the main PHOS DCS GUI. Check the status of Wiener VME OPC server on alidcscom074 computer. Inform DCS expert.

### **32. PHOS cooling water pressure is abnormal.**

Name	PHOS cooling water pressure is abnormal.
Condition	>975 - Cooling water pressure level is high.
	>985 - Cooling water pressure level is very high.
	>995 - Cooling water pressure level is extremely high.
	40
PVSS priority	60
	80
	"Warning" Cooling water pressure level is high.
Description	"Error" Cooling water pressure level is very high.
Description	"Fatal" Cooling water pressure is extremely high. Danger of water leak
	inside the "warm" volume of PHOS modules.
Operator's instruction	If status=WENT do nothing.
	Otherwise: check the status of PHOS, TOF, EMCAL and CPV common
	water cooling plant, inform PHOS oncall expert.
PHOS expert's	Check the current level of water cooling pressure and the status of water
instruction	cooling plant. Stop the power of all PHOS modules if required.

### 33. PHOS LV Wiener crate output failure.

Name	PHOS LV Wiener crate output failure.
Condition	True – Output failure.
PVSS priority	60
Description	"Error" PHOS LV Wiener crate doesn't respond.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check the connection to alidcscom073 computer. Check Wiener OPC server
instruction	status on alidcscom073 computer. Inform DCS expert.

Name	PHOS LV Wiener channel overcurrent.
Condition	True – Output Current Too High.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel trip because of overcurrent.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check if HV is off for appropriate PHOS module because of triggered HV-
instruction	LV software interlock. Restart the power for chosen PHOS module.

#### 34. PHOS LV Wiener channel overcurrent.

#### **35. PHOS LV Wiener channel trip because of maximum power threshold.**

Name	PHOS LV Wiener channel trip because of maximum power threshold.
Condition	True – Output Power Too High.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel trip because of maximum power
	threshold.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check if HV is off for appropriate PHOS module because of triggered HV-
instruction	LV software interlock. Restart the power for chosen PHOS module.

### **36. PHOS LV Wiener channel trip because of maximum sense voltage threshold.**

Name	PHOS LV Wiener channel trip because of maximum sense voltage threshold.
Condition	True – Sense Voltage Too High.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel trip because of maximum sense voltage
	threshold.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check if HV is off for appropriate PHOS module because of triggered HV-
instruction	LV software interlock. Restart the power for chosen PHOS module.

## **37. PHOS LV Wiener channel trip because of the maximum temperature threshold.**

Name	PHOS LV Wiener channel trip because of the maximum temperature threshold.
Condition	True – Temperature failure.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel trip because of the maximum temperature
	threshold.

Operator's instruction	If status=WENT do nothing. Otherwise: Check the status of PHOS, TOF, EMCAL and CPV common water cooling plant, inform PHOS expert oncall immediately.
PHOS expert's instruction	Check if HV is off for appropriate PHOS module because of triggered HV- LV software interlock. Check the current temperature of LV channels and status of water cooling plant. Restart the power for chosen PHOS module.

## 38. PHOS LV Wiener channel trip because of maximum terminal voltage threshold.

Name	PHOS LV Wiener channel trip because of maximum terminal voltage threshold.
Condition	True – Terminal Voltage Too High.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel trip because of maximum terminal
	voltage threshold.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check if HV is off for appropriate PHOS module because of triggered HV-
instruction	LV software interlock. Restart the power for chosen PHOS module.

### **39. PHOS LV Wiener channel trip because of minimum sense voltage** threshold.

Name	PHOS LV Wiener channel trip because of minimum sense voltage threshold.
Condition	True – Sense Voltage Too Low.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel trip because of minimum sense voltage threshold.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check if HV is off for appropriate PHOS module because of triggered HV-
instruction	LV software interlock. Restart the power for chosen PHOS module.

#### 40. PHOS LV Wiener channel temperature is abnormal.

Name	PHOS LV Wiener channel temperature is abnormal.
Condition	>65 - LV Wiener channel temperature is very high.
PVSS priority	80
Description	"Fatal" PHOS LV Wiener channel temperature is very high. Danger of LV
	trip because of the temperature threshold.
Operator's instruction	If status=WENT do nothing.
	Otherwise: check the status of PHOS, TOF, EMCAL and CPV water cooling
	plant, inform PHOS oncall expert.
PHOS expert's	Check the temperature of Wiener LV channels. Check the status of water
instruction	cooling plant. Switch off the power of PHOS modules if required.

Name	PHOS LV Wiener channel timeout failure.
Condition	True – Communication timeout.
PVSS priority	60
Description	"Error" PHOS LV Wiener channel timeout failure.
Operator's	If status=WENT do nothing.
instruction	Otherwise: inform PHOS oncall expert.
PHOS expert's	Check the connection to alidcscom073 computer. Check the status of Wiener
instruction	OPC server on alidcscom073. Inform DCS expert.

#### 41. PHOS LV Wiener channel timeout failure.