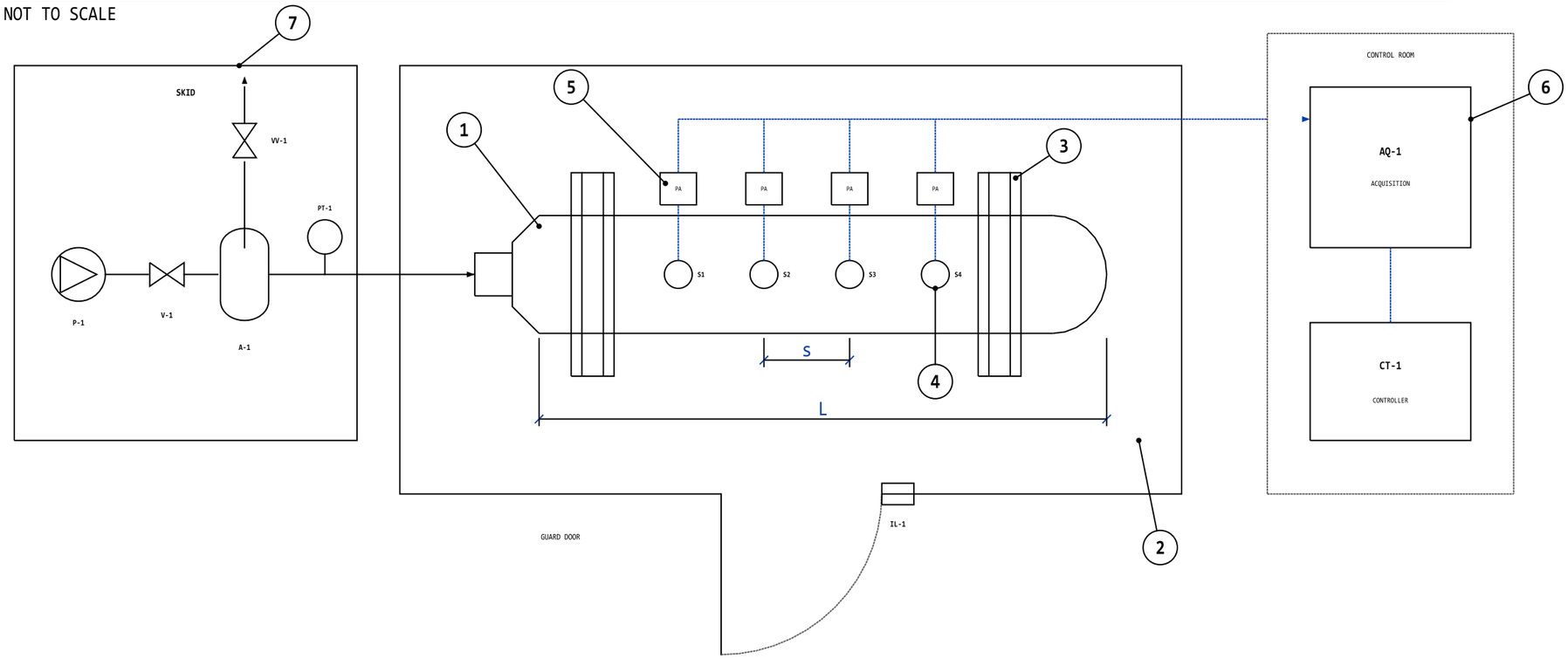
PLAN - CYLINDER TEST CELL

NOT TO SCALE



THE FILL LINE GOES FROM THE SKID THROUGH THE WALL OF THE CELL TO THE VALVE OF THE CYLINDER; THE FOUR SENSORS S1 TO S4 SIT ON ITS TOP, EACH WITH A PREAMPLIFIER PA, AND ONE CABLE BUS LEAVES THE CELL
THE ACQUISITION CABINET AQ-1 AND THE CONTROLLER CT-1 SIT IN THE CONTROL ROOM; L IS THE LENGTH OF THE CYLINDER AND s THE SPACING OF THE SENSORS, SET FROM THE MEASURED DECAY OF THE WAVE
THE EMERGENCY VENT VV-1 AND THE INTERLOCK IL-1 WORK APART FROM THE CONTROLLER; NOBODY STANDS NEAR A PRESSURISED VESSEL

NOTES

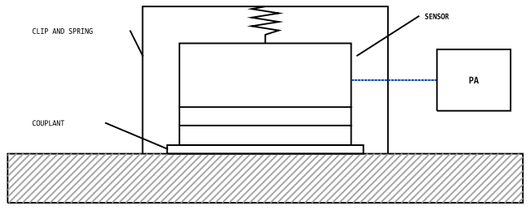
1. REFERENCE ARRANGEMENT OF AN ACOUSTIC EMISSION TEST STATION. LETTERS ARE DIMENSIONS SET BY DESIGN: NO PRESSURE, RATE, TIME, FREQUENCY OR SIZE VALUE IS GIVEN.
2. THE PLAN SHOWS THE CYLINDER TEST CELL: THE CYLINDER UNDER TEST ON TWO PADDED CRADLES, FOUR SENSORS S1 TO S4 ON ITS TOP EACH WITH A PREAMPLIFIER, ONE CABLE BUS TO THE ACQUISITION CABINET AQ-1, AND THE PRESSURISATION SKID OUTSIDE THE CELL WITH THE PUMP P-1, THE ISOLATION VALVE V-1, THE ACCUMULATOR A-1, THE TRANSDUCER PT-1 AND THE EMERGENCY VENT VV-1. L IS THE LENGTH OF THE CYLINDER AND s THE SPACING OF THE SENSORS.
3. DETAIL A: THE SENSOR ON THE WALL. DETAIL B: THE QUIET HOLD, WITH THE PUMP OFF AND THE ISOLATION VALVE CLOSED. DETAIL C: THE PADDED CRADLE.
4. THE SIGNAL CHAIN AND THE PROTECTION CHAIN, AND THE CURVES OF THE PRESSURE STEPS, THE KAISER EFFECT AND THE LINEAR LOCATION, ARE ON SHEET 002. THE SENSORS, THE PREAMPLIFIERS, THE ACQUISITION HARDWARE AND THE SOFTWARE ARE CATALOGUE ITEMS, BOUGHT IN. NOBODY STANDS NEAR A PRESSURISED VESSEL.

ITEMS

ITEM	DESCRIPTION
1	CYLINDER UNDER TEST
2	TEST CELL WITH GUARD DOOR
3	PADDED CRADLE
4	SENSOR S1 TO S4
5	PREAMPLIFIER PA
6	ACQUISITION CABINET AQ-1
7	PRESSURISATION SKID: P-1, V-1, A-1, PT-1, VV-1

DETAIL A - THE SENSOR ON THE WALL

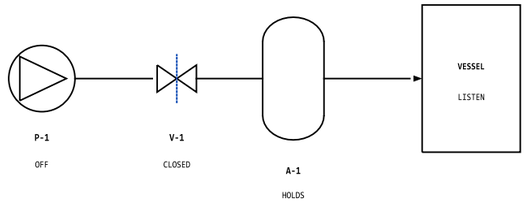
NOT TO SCALE



THE WAVE RUNS ALONG THE WALL TO THE SENSOR, WHICH IS HELD ON A FILM OF COUPLANT
BY A CLIP AND A SPRING; THE PREAMPLIFIER SITS CLOSE BEHIND IT SO THAT THE SMALL
SIGNAL TRAVELS ONLY A SHORT WAY BEFORE IT IS BOOSTED

DETAIL B - THE QUIET HOLD

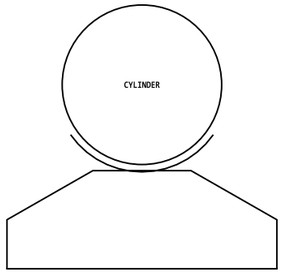
NOT TO SCALE



DURING A HOLD THE PUMP P-1 IS SHUT OFF AND THE ISOLATION VALVE V-1 IS CLOSED:
THE ACCUMULATOR A-1 HOLDS THE PRESSURE AND THE VESSEL IS LISTENED TO
WITHOUT THE NOISE OF THE PUMP

DETAIL C - THE PADDED CRADLE

NOT TO SCALE



THE PAD CARRIES THE CYLINDER SO THAT
IT DOES NOT RUB AS THE PRESSURE RISES

REFERENCE CONFIGURATION - NOT FOR CONSTRUCTION

NEOMETRIX DEFENCE LIMITED

ENGINEERED IN NOIDA - INDIA

ACOUSTIC EMISSION TEST STATION - REFERENCE CONFIGURATION

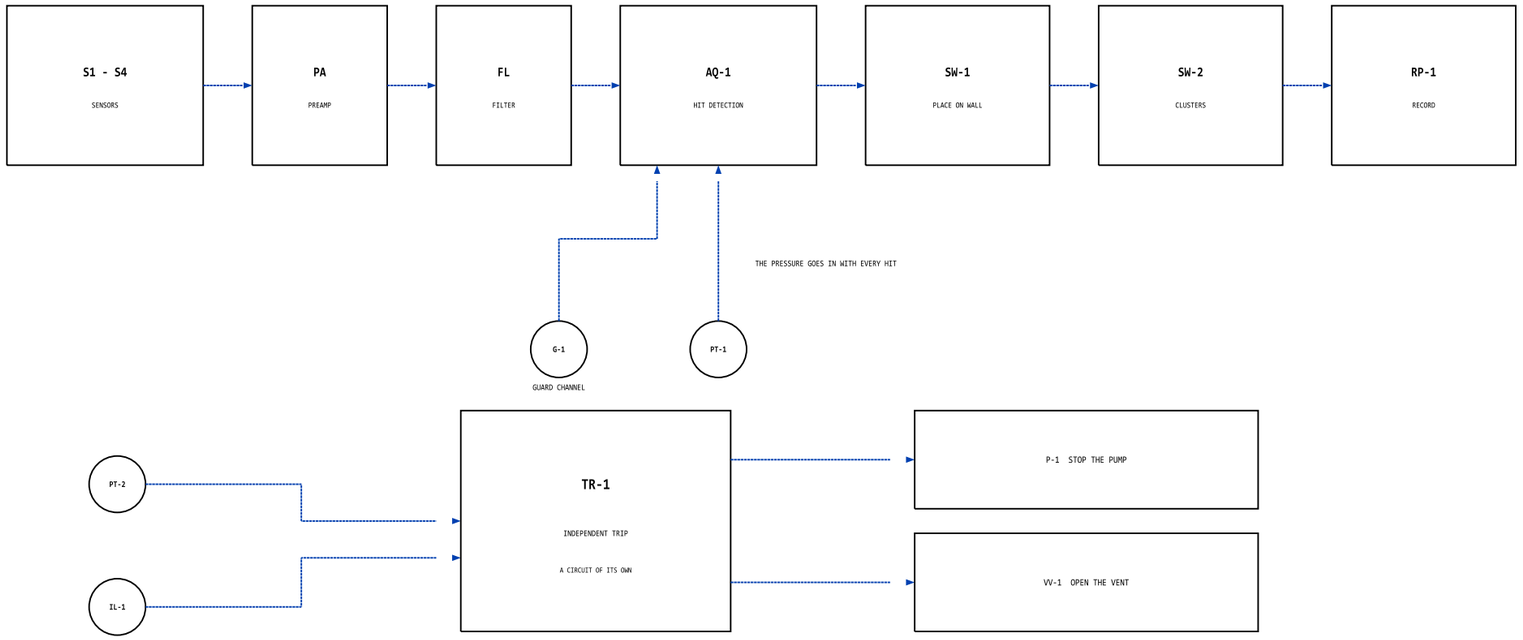
ARRANGEMENT AND DETAILS

THE CELL, THE SENSORS, THE SKID AND THE QUIET HOLD

DWG NO	SCALE @ A3	SHEET	REV
NMX-AET-109-001	NTS	1 OF 2	A
DATE	UNITS	DRAWN	STATUS
17-11-2026	TAGS ONLY	NMX-DO	REFERENCE

SIGNAL AND PROTECTION CHAINS - ACOUSTIC EMISSION TEST STATION

NOT TO SCALE



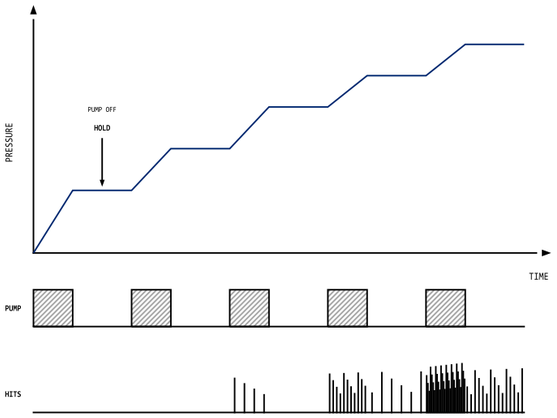
SIGNAL: THE SENSORS S1 TO S4 FEED THE PREAMPLIFIERS PA AND THE FILTER FL INTO THE HIT DETECTION AQ-1, WHICH RECORDS EVERY HIT WITH THE PRESSURE OF PT-1; SW-1 PLACES EACH HIT ON THE WALL
AND SW-2 SORTS THE HITS INTO CLUSTERS; THE TRIP TR-1 IS A CIRCUIT OF ITS OWN: IT TAKES PT-2 AND THE DOOR INTERLOCK IL-1, STOPS THE PUMP P-1 AND OPENS THE VENT VV-1 WITHOUT ASKING THE CONTROLLER

NOTES

1. REFERENCE SIGNAL AND PROTECTION CHAINS OF AN ACOUSTIC EMISSION TEST STATION. TAGS AND LETTERS ONLY: NO PRESSURE, RATE, TIME, FREQUENCY OR SIZE VALUE IS GIVEN.
2. SIGNAL: THE SENSORS S1 TO S4 FEED THE PREAMPLIFIERS PA AND THE FILTER FL INTO THE HIT DETECTION AQ-1, WHICH RECORDS EVERY HIT WITH THE PRESSURE OF THE TRANSDUCER PT-1. THE SOFTWARE SW-1 PLACES EACH HIT ON THE WALL, SW-2 SORTS THE HITS INTO CLUSTERS AND RP-1 IS THE RECORD. THE GUARD CHANNEL G-1 HELPS TO REJECT NOISE FROM OUTSIDE.
3. PROTECTION: THE TRIP TR-1 IS A CIRCUIT OF ITS OWN. IT TAKES THE SECOND TRANSDUCER PT-2 AND THE DOOR INTERLOCK IL-1, STOPS THE PUMP P-1 AND OPENS THE VENT VV-1 WITHOUT ASKING THE CONTROLLER.
4. DETAIL A: THE PRESSURE STEPS, WITH THE PUMP OFF IN EACH HOLD. DETAIL B: THE KAISER EFFECT AND THE FELICITY EFFECT. DETAIL C: THE LINEAR LOCATION OF A SOURCE FROM THE ARRIVAL TIMES.
5. THE CURVES ARE COMPUTED FROM SIMPLE MODELS, IN RELATIVE UNITS: A PICTURE OF THE IDEA, NOT A MEASUREMENT. THE ARRANGEMENT AND THE DETAILS ARE ON SHEET 001. NOBODY STANDS NEAR A PRESSURISED VESSEL.

DETAIL A - THE PRESSURE STEPS

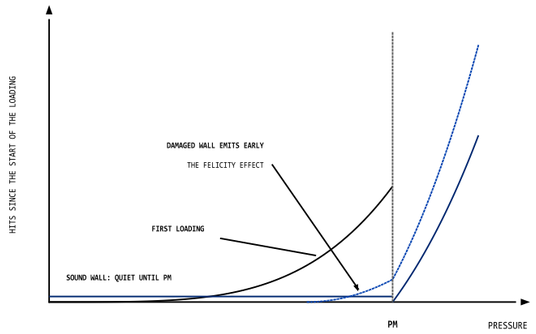
NOT TO SCALE - COMPUTED



THE PRESSURE RISES IN STEPS: THE PUMP IS ON IN EACH RAMP AND OFF IN EACH HOLD, WHEN THE
ACCUMULATOR HOLDS IT AND THE WALL IS LISTENED TO IN SILENCE; A GROWING FLAW IS HEARD MOST
AT THE HIGHEST LEVELS, EVEN IN THE HOLD
COMPUTED FROM A SIMPLE MODEL: A PICTURE OF THE IDEA

DETAIL B - THE KAISER EFFECT

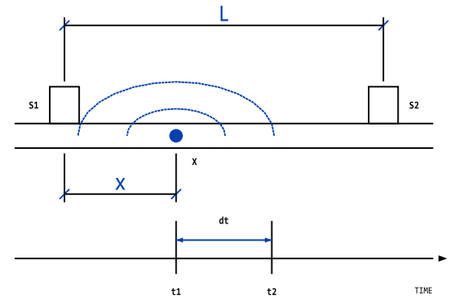
NOT TO SCALE - COMPUTED



PM IS THE HIGHEST PRESSURE SEEN BEFORE: ON A SECOND LOADING A SOUND WALL STAYS QUIET
UNTIL IT IS PASSED (THE KAISER EFFECT), SO THE TEST GOES ABOVE THE WORKING PRESSURE;
A DAMAGED WALL STARTS TO EMIT BEFORE IT
COMPUTED FROM SIMPLE MODELS: A PICTURE OF THE IDEA, NOT A MEASUREMENT

DETAIL C - LINEAR LOCATION

NOT TO SCALE - COMPUTED



$$x = (L - v\,dt) / 2$$

THE BURST FROM X REACHES S1 AT t1 AND S2 AT t2:
THE DIFFERENCE dt AND THE WAVE SPEED v PLACE X
ON THE LINE BETWEEN THE TWO SENSORS
COMPUTED: A PICTURE OF THE IDEA

REFERENCE CONFIGURATION - NOT FOR CONSTRUCTION

NEOMETRIX DEFENCE LIMITED
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ACOUSTIC EMISSION TEST STATION - REFERENCE CONFIGURATION

SIGNAL, PROTECTION, CURVES

THE SIGNAL AND PROTECTION CHAINS AND THE CURVES OF THE IDEA

DWG NO	SCALE @ A3	SHEET	REV
NMX-AET-109-002	NTS	2 OF 2	A
DATE	UNITS	DRAWN	STATUS
17-11-2026	TAGS ONLY	NMX-DO	REFERENCE