BAND-IT

PRODUCT TEST REPORT

FILE #		DATE	08/01/2007	TESTED BY	SINTEF (Trondheim University)	PG	1	OF	5

MANUFACTURER
BAND-IT Ltd

CUSTOMER	
DISTRIBUTOR	END USER
Texit Norway	Aker

TEST REQUESTED BY	Aker
ATTENDEES	Steve Franklin / John Bowmer – Band-It Ltd Hermod Iverson – Brady Texit Norway Dick Granli / Arnt Egeland - Aker
COPIES CIRCULATED TO	John Bowmer / Matt Stillings. Pending official SINTEF report to be distributed to Band-It / Texit / Aker.
TEST DESCRIPTION	Performance of Coated Band (double wrap & single wrap) during electrical short circuit of trefoil cable runs.

ITEMS TESTED
AE435 PPA571 Coated 316s/s Band 5/8" wide used with LE155 clip (double wrap) and AE455 clip (single wrap).

COMMENTS

TEST PURPOSE

The purpose of this test was to investigate the performance of 5/8" wide Coated Band to secure cables to cable ladder when subjected to electrical short circuit conditions. If successful Aker intend to use Band-It products in the place of cable cleats on the H6 Oil Rig project.
Advantages of using coated band over cleats;

- Lower cost of materials
- Lower installation costs
- Less weight (up to $1/10^{th}$ of the weight of cleats)
- Health & safety – eliminates risk of heavy cleats / nuts / bolts being dropped from above.

TEST PROCEDURE

A length of Ogleand Cable Ladder (ref OE-100-600) was fitted with 300sq mm single core Draka "Shipline" cable (ref TI 1x300) in trefoil arrangement using Band-It PPA Coated 316s/s Band (ref AE435) at 300mm spacings (each ladder rung – total 10 straps per cable run) with AE455 (sigle wrap) or LE155 (double wrap) clips, applied using the ref C075 Bantam Tool. The cables were then subjected to short circuit of varying levels. The band / clips / cables / ladder were inspected after each short circuit.

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TEST RESULTS

The results for each test are shown in **Table 1.**

Table 1: Performance Results

Test #	AE435 band Single / Double wrapped	Clip ref	Cable Configuration	Short Circuit Value (kA)	Pass / Fail
1	Double	LE155	4 parallel runs of trefoil	85	Pass
2	Double	LE155	4 parallel runs of trefoil	114	Pass
3	Double	LE155	4 parallel runs of trefoil	128	Pass
4	Single	AE455	4 parallel runs of trefoil	85	Pass
5	Single	AE455	4 parallel runs of trefoil	109	Pass
6	Single	AE455	4 parallel runs of trefoil	122	Pass
7	Single	AE455	4 parallel runs of trefoil	132	Pass
8	Single	AE455	4 parallel runs of trefoil	139	Pass
9	Single	AE455	4 parallel runs of trefoil	139	Pass
10	Double	LE155	Single run of trefoil	65	Pass
11	Double	LE155	Single run of trefoil	64	Pass
12	Single	AE455	Single run of trefoil	62	Fail

Tests 1-3 were conducted in succession on the same test rig. After each test the rig was inspected and there was no evidence of any change in the rig. All bands remained intact and negligible movement was found in the cable. No damage was seen on the cable or the cable ladder.
Due to the success of these tests, the customer decided to try similar tests using a single wrap of band. The double wrap bands were removed and replaced with single wrap bands.
After test 4 there was still no change seen in the rig.
After test 5 there was some evidence of slight slackening of 2 bands. However, this appeared to be due to distortion in the cable ladder slots. No slippage of band through the buckle was seen. These 2 bands were replaced for test 6.
After test 6 (122kA) slight movement in some of the cables was evident. This again appeared to be due to distortion of the ladder. All bands remained intact and none were replaced for test 7.
After tests 7 (132kA), 8 (139kA) and 9 (139kA) there appeared to be no change other than slight movement now in all 4 cable runs due to ladder distortion.
After test 9 the bands were removed and the cable was inspected for damage. No damage to the cable was evident.
The test rig was then re-fitted with double wrap bands on a **single** trefoil run of cable using different slots in the cable ladder (so that any deformation in the slots could be seen). It was expected that this would exert much higher loading on the bands since the forces tend to be evenly spread between parallel cable runs.
After test 10 (65kA) the bands remained intact, although slight slippage in some clips was evident (1-2mm), along with distortion of the ladder slots.
After test 11 (64kA) further slippage in the clips and further slot distortion was seen, but all bands remained intact. The bands were then removed and replaced with single wrap for test 12.
During test 12 (62kA) all of the (single wrapped) bands failed by way of the band pulling through the clips. The cable ladder was also severely distorted.

CONCLUSION

The customer (Aker) was very happy with the test results. Testing was done well beyond requirements for the H6 project. They will be specifying Band-It Coated Free-End Clamps in single and double wrap versions (depending upon cable runs) on H6 and future projects.

Pass [X] **Fail** [ ] **NA** [ ]

SUPPORTING PHOTOS

Fig 1; Test rig fitted with 4 parallel trefoil cable runs



Fig 2; Double wrapped AE455 band / LE155 Clip positioning



Fig 3; Rig after test #7



Fig 4; Rig after test #8



Fig 5; Rig after test #9



Fig 6; Rig prior to test #10



Single run of trefoil.

Fig 7; After test #10



(Double wrapped band)

Fig 8; After test #10



Close-up of band

Fig 9; After test #11



Visible slippage of band in clip.

Fig 10; After test #12



All bands failed on single wrap.

After test #12



Close up of failed band.