Winches and Wires

Message ID: **8** Entry time: **Fri Nov 6 04:07:06 2015**

Cruise:	AR01-01
Subject:	1310 nm Initial OTDR traces NSF-09-F05
Type:	Wire
Winch:	Traction
Wire:	.681 Fiber
Category:	Routine
Author:	Simoneau
Revisions:	& Fri Nov 6 04:18:56 2015

Inital OTDR readings, 1310 nm .. maybe should have done 1550 too, but we were in a time jam and I mostly wanted to prove that the fibers were unbroken in the middle of the cable.

Email convo between Chris Taylor and Amy with good tips and a great resource.

Date: Thu, 5 Nov 2015 03:24:15
From: Chris Taylor <cltaylor@whoi.edu>
To: Armstrong SSSG <sssg@armstrong.whoi.edu>
Cc: Christopher Griner <cgriner@whoi.edu>, "List, SSSG" <sssg@whoi.edu>
Subject: Re: .681 OTDR testing.

Hi Amy,

These look pretty standard fare, I don't see any issues with the fibers. If you have any specific questions about them, let me know.

It looks like you used a 150m launch fiber? That's good practice, as it allows you to tell if you have a bum connector on the front end (if you're looking for that kind of problem).

I can view .SOR files, for future reference. That also let's me zoom in on parts and take measurements like you can do directly on the OTDR.

It's good to know the lineage of the cable, thanks.

To the best of my knowledge the A302351 design has not changed, but maybe he knows something I don't. Chris? We do have a different version of the cable with Jason on a direct drive winch, but it has a different part number.

Finally, if there is anything else I can help with, reviewing more traces or whatever, please don't hesitate to ask me anytime... especially if there are unexpected results or questions. I'll do whatever I can to help out. I keep track of Jason 681 cable traces and HIPOT tests/measurements, so have seen some different things with the cables.

-Chris

On 11/4/15 8:02 PM, Armstrong SSSG wrote:
Hi Chris,

Here are the traces. I wasn't sure if you could do an .sor file, so I exported .pdfs

black_fiber_681_4nov15.pdf

red_fiber_681_4nov15.pdf

clear_fiber_681_4nov15.pdf

Not sure if these will blow up here upon submittal, but I added them below too.. AMS 5Nov2015

Chris Griner wanted me to let you know the Rochester cable # is A302351 and that it is from back in 08 - I gather they have changed something about the wire since then.

Thanks,
Amy

On 3Nov, 2015, at 18:50, Chris <cltaylor@whoi.edu> wrote:

Great, glad to hear you've made forward progress and getting data! Looking forward to seeing the traces.

-Chris

On Nov 3, 2015, at 18:38, Armstrong SSSG <sssg@armstrong.whoi.edu> wrote:

Hi Chris,

Shortly after writing this we got one fiber to give a good reading. The other two were still not working, but the exposed fiber part seemed a little iffy and I believe were both broken in that section. We peeled back a bit more and tried again and now have three good fibers! Yahoo. I am going to work on downloading the trace from the meter and I will send them your way when I do. Meanwhile thank you so much, your tips were great and really got us headed in the right direction.

We did it all in auto. Maybe some other time when we are not iin a crunch and I am working from the outboard end which can be cut back again and again I will play more with manual mode and those settings.

More later,
Amy

On 3Nov, 2015, at 12:58, Chris Taylor <cltaylor@whoi.edu> wrote:

If the cable is about 10km long, I assume, then set it to the next longest. 25km should be fine, and you should see it.

If you are in manual mode, you might want to try the pulse width around 500ns or 1us, that puts more power into the longer cable.

Yes, if you are in auto mode, it should adjust the pulse width and range and 'look' for the end of the cable.

Send me the make/models of OTDR's, and I'll look at their settings. That might save some back and forth.

I'll be out for a few hours, but will check back in on this asap.

-Chris

On 11/3/15 3:34 PM, Armstrong SSSG wrote:
Hi Chris,

One thing that doesn’t make sense to me is if I have the range set at 10000m (or 25000m, the help says to set it to 2x expected length, maybe ‘auto’ takes care of this too) the trace never shows that full span. Think we have some setting wrong?

Thanks,
Amy

On 3Nov, 2015, at 11:23, Armstrong SSSG <sssg@armstrong.whoi.edu> wrote:

Hi Chris,

It is a traction winch.

Thanks,
Amy

On 3Nov, 2015, at 11:04, Chris Taylor <cltaylor@whoi.edu> wrote:

On 11/3/15 1:40 PM, Armstrong SSSG wrote:
Hi Chris,

Tried sending this earlier.. we had connectivity troubles. Trying again now.

Thank you, this is exactly the information we need. We do have a cleaver on board and I thought that was the way to do it on board but I couldn’t figure out the length and there was no info with the adapter.
I would start with something like 10mm of bare fiber after cleave. When you insert it, you will know right away if it's not

long enough. You just don't want to have so much bare fiber length that the bare fiber itself ends up in the clamping part, as it will break when the clamp is released.
The tape trick is great and will help a lot. We got a bit of a reprieve because it was determined it was more important to get the ctd-lars docking head/heave compensation winches tested first. I'll work on this and let you know how it goes.
Also good to know about the auto setting. That is what we had tried first but then were reading up and it said something like 'more trouble is found from using the auto setting than is gained from it' . Why the heck do they have it then?
In auto mode most OTDR's will use their internal algorithms to classify 'events' along the fiber. It can make it confusing, but not always. What you are looking for is baseline length as you have a new cable that more than likely is perfectly fine. I do use manual mode lots of the time, but mainly adjust range, pulse width, and averaging... and use defaults for fiber-specific parameters. If you have time, you can try both methods. Don't let the manual lure you into thinking you won't get useful data if you don't have the exact fiber parameters. The default values will put you in the right ballpark, which is what you need.

Anyway, thanks a lot. Will let you know how we make out.
No problem. I'd be glad to review traces whenever that happens.

BTW, if you have a second, I would like to know if the 681 winch is a traction or direct drive winch.

Thanks,
Chris

Best,
Amy

On 2Nov, 2015, at 18:39, Chris Taylor <cltaylor@whoi.edu> wrote:

Hi Amy/Chris,

First, bare fiber adapters. I don't know what kind you have, but you have to strip the fiber and cleave the end of it before inserting it into the adapter. It's important the you release the clamp only when the end of the fiber is flush with the ferrule, otherwise you won't get proper coupling with the OTDR and might see weird stuff. Hopefully you have a cleaving tool? If you don't have a way to cleave the fiber, then there won't be any point in going any further as you won't be able to get light coupled into it properly. You won't be able to polish it.

One trick with a bare fiber adapter is to put a piece of scotch tape across the ferrule end. Then insert the cleaved fiber until it bottoms out on the tape. Then release the clamp and peel off the tape. That can help take the guesswork out of aligning the fiber flush with the ferrule.

Next, OTDR. Sounds like the OTDR is in manual mode, you don't need it in that mode for what you are trying to do. Use Auto mode, and it will use basic default parameters for things like index of refraction, backscatter coefficient, etc, and it will auto-range the length of the fiber. That will be plenty good enough to get readings of fiber health, you don't need to enter all those other parameters.

I've attached a trace of an example good OTDR trace. You can see the front end reflection and then the far end reflection. The distance between the leading edges of them is the length of the fiber. Sometimes, depending on your setup, you might see a second or third 'false' reflection shortly after the first reflection. I'd have to see the trace to comment if you're seeing that.

If you send me pics or whatever of your traces, I can help determine what you are seeing.

I assume this is a A302351 cable with 3 Steel-lights? What is the estimated length of the cable? Are you using a length of fiber between the OTDR and Steel-light, or right to the Steel-Light. Either way will be ok for what you are doing.

Is it a traction winch, or direct drive?

Send me pics, and I'll help the best I can!

-Chris

On 11/2/15 7:02 PM, Christopher Griner wrote:
Chris and Amy,

I also just sent a message to Rick Trask asking for the manufacturers Certificate of Compliance. This should include the initial OTDR readings from the factory. May help and we should have a record of it.
Chris, if you can offer us OTDR greenhorns pointers and maybe review some readings .... much appreciated:).

Chris
From: Armstrong SSSG

Sent: 11/2/2015 15:16
To: Chris Taylor
Cc: Chris Griner
Subject: Fwd: .681 OTDR testing.

Hi Chris,

Chris Griner gave me your email address and said that you might be another good person to ask about OTDR measurements on the .681 FO cable. I sent the below message to Korey a few hours ago and have yet to hear back from him. We are hoping to get this knocked out before our winch testing tomorrow. If not, we'll do it afterwards. Less than ideal, but we will do what we can.

Any pointers?

Thank you,
Amy Simoneau

Begin forwarded message:

From: Armstrong SSSG <sssg@armstrong.whoi.edu>
Subject: .681 OTDR testing.
Date: November 2, 2015 at 12:20:56 PST
To: Korey Verhein <kverhein@whoi.edu>

Hi Korey,

We are out here on Armstrong trying to get our .681 wire OTDR tested out before we do any winch tests (tomorrow, yes, last minute I know). Laura, Chris, and I tried yesterday without much luck - well, the numbers did not make sense unless two of three fibers are broken at different places in the wire AND we got different numbers from two meters.

One thing I don't know about is that the meter(s) (we have one of Alucia's and ours) we are trying wants to know the backscatter coefficient. It says this is provided by the manufacturer, but I am not sure that I see this number on the spec sheed from Rochester. Do you know what this is or even what the units of the coefficient might be? We aren't terminatng the cable for use, we just want to test it out, so we are trying to use a bare fiber (temporary) adapter on the end. Not 100% sure of the process of this either - does it need to be polished? It does not seem to fit into the polishing puck quite like the SC or ST connectors.

Pretty much any info you had would be usefu. Do you have a written up procedure anywhere? I tried googling a bit before we left the dock and actually had a reasonable internet connection, particularly about the bare fiber adapter, but apparently I am still dumb.

Looking for tips and advice - and kinda quickly to boot. If you have another source of wisdom, feel free to point me in that person's direction.

Hope you are well,
Thanks, Amy

<c-11-allr.png>

Attachment 1:	red_fiber_681_4nov15.pdf 65 kB
Attachment 2:	black_fiber_681_4nov15.pdf 64 kB
Attachment 3:	clear_fiber_681_4nov15.pdf 64 kB
Attachment 4:	clear_fiber_681_4nov15.pdf 64 kB
Attachment 5:	black_fiber_681_4nov15.pdf 64 kB