UNC CHARLOTTE
The WILLIAM STATES LEE COLLEGE *of* ENGINEERING

Senior Design Project Description

Company Name	Dinamic Oil North America, Inc	**Date Submitted**	March 28, 2017
Project Title	Optional Cable Spooling Device (DINA_SPOOL)	**Planned Semester**	Fall 2017

Personnel

Typical teams will have 4-6 students, with engineering disciplines assigned based on the anticipated Scope of the Project. 250 hours are expected per person. Complete the following table if this information is known, otherwise the Senior Design Committee will develop based on the project scope:

Discipline	Number	Discipline	Number
Mechanical	2	Electrical	2
Computer	1	Systems	
Other ( )			

Project Overview:

In the Oil & Gas market, wells need to be serviced regularly. A well can be thousands of feet in depth and, at times, a tool or device must be lowered into the well with a winch for fishing or verification of the well's condition. The device / tool weight is relatively small, typically no more than 250 kg. What is of concern is the total cable length needed to lower and raise the tool or device.

Any type of downtime, caused by well servicing or otherwise, translates to lost income. Therefore, the faster a well can be serviced, the more quickly it will be operational again. For this reason, the cable speed during lowering and raising is critical. When using a cable of great length (5,000 – 6,000 ft), a large winch drum assembly is used to spool the cable onto multiple layers. Multi-layer spooling at high speeds can cause many spooling issues which are undesirable.

This project is to analyze this problem and develop a proof of concept for a device that can be added to a winch in the field to prevent this problem.

Initial Project Requirements:

The device would determine the current position (location and layer) of the cable being spooled on or off the drum, automatically guide the cable accurately and smoothly onto its next position, and make positional corrections as needed. The device and cable guide, typically consisting of vertical and horizontal rollers, would reciprocate along the length of the drum by means of a servo motor. The cable/drum speed is controlled by the operator, therefore the device should be in sync

with the winch at all times, automatically increasing and decreasing the servo motor speed as needed.

Expected Deliverables/Results:

A proof of concept device to be tested on site is desired.

Disposition of Deliverables at the End of the Project:

To be delivered to 4725 Entrance Drive – Suite A
Charlotte, NC 28273, attn. Sangeet Jasani

List here any specific skills, requirements, knowledge needed or suggested (If none please state none):

None