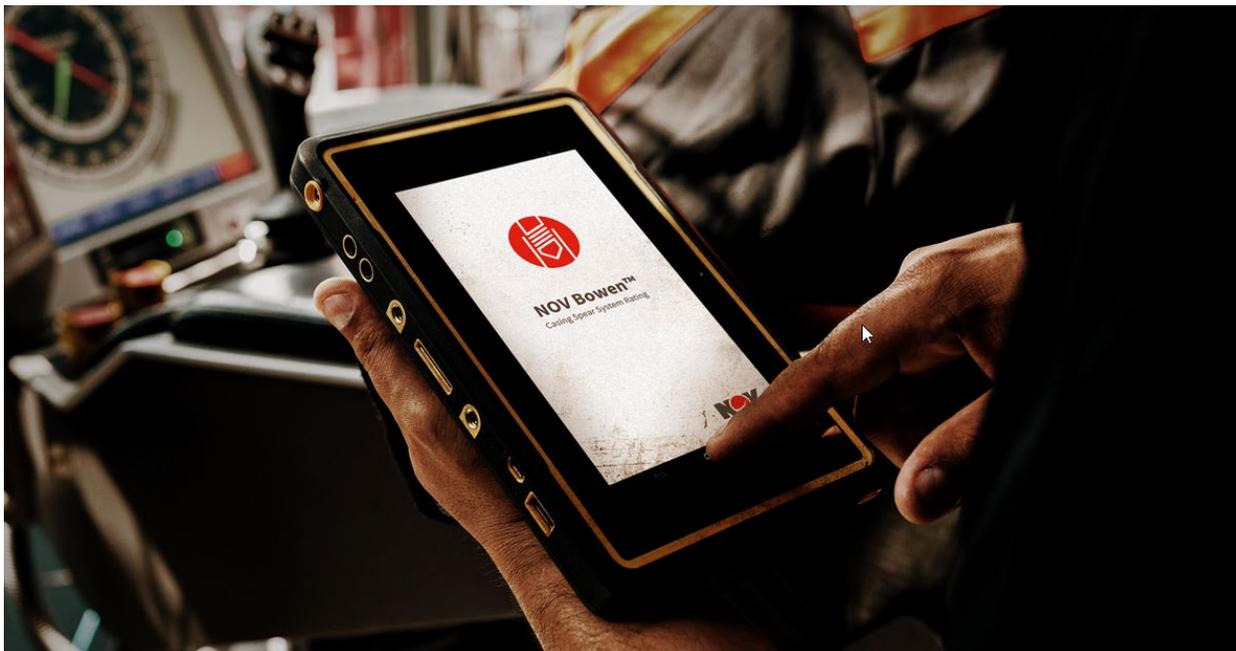


# Bowen Casing Spear System Calculator



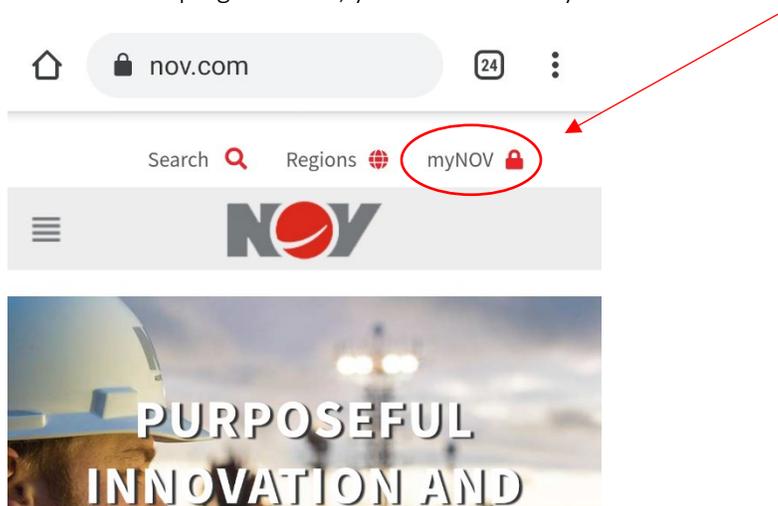
Our Bowen™ Casing Spear app will help you determine which spear assembly and grapple combination will provide the greatest strength. Our app also allows you to identify the weakest component of the system, so you can plan accordingly.

## Table of Contents:

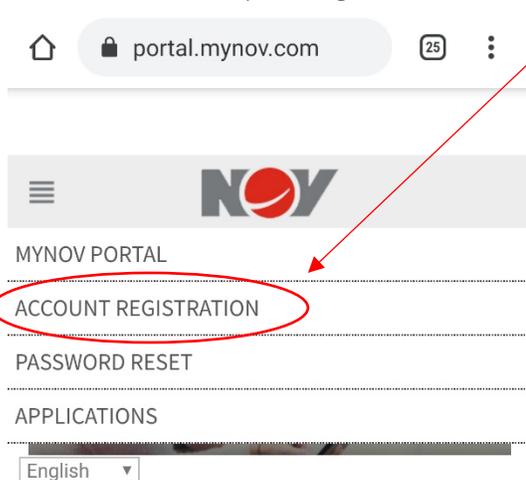
1. Register for a MyNOV Account
2. Request Access to Downhole Software
3. Using the Software

## Registering a MyNOV Account

1. Go to NOV.com
  - a. In the top right corner, you will locate “mynov.com” click this link



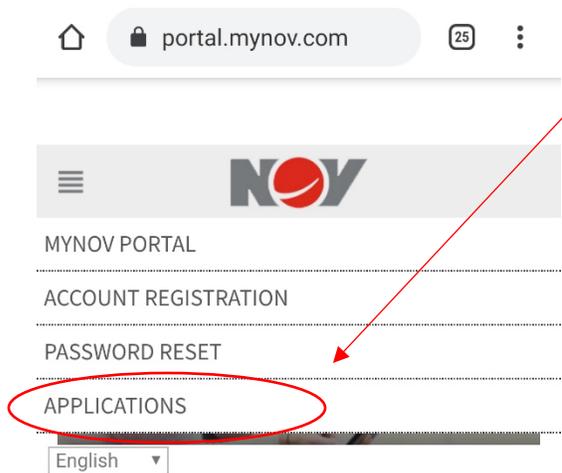
2. Create an account by clicking on Account Registration



3. Fill out the information needed for MYNOV Account Registration and then click Submit Registration. (Use your company email. Gmail/etc. will not be accepted)
4. Shortly, you should receive an email to verify your email address. Go back to portal.mynov.com , and Sign In, click MYNOV, and enter credentials that you set up in Step 2.
5. You are now logged into MyNOV.

## Requesting Access to Downhole Software

7. Once logged into MyNOV. Click on the **Applications** button

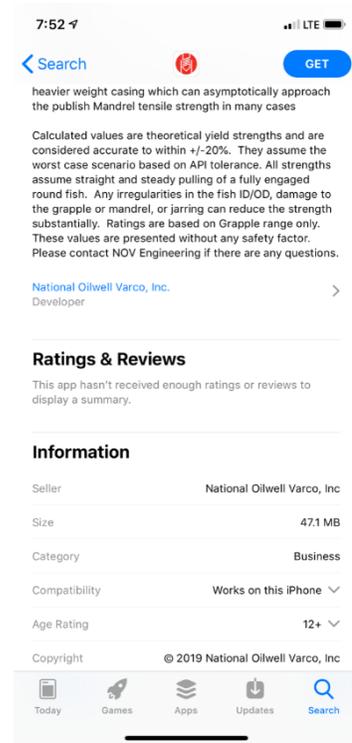
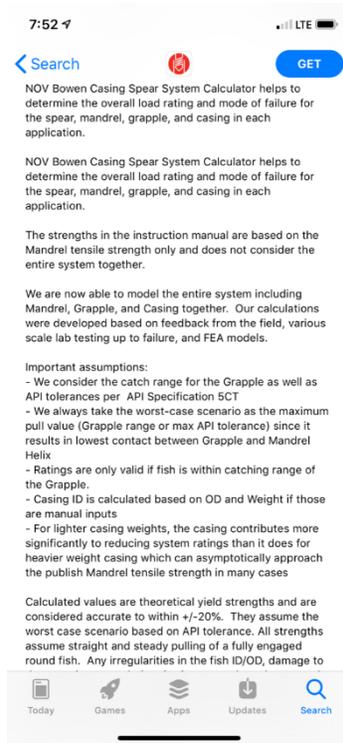
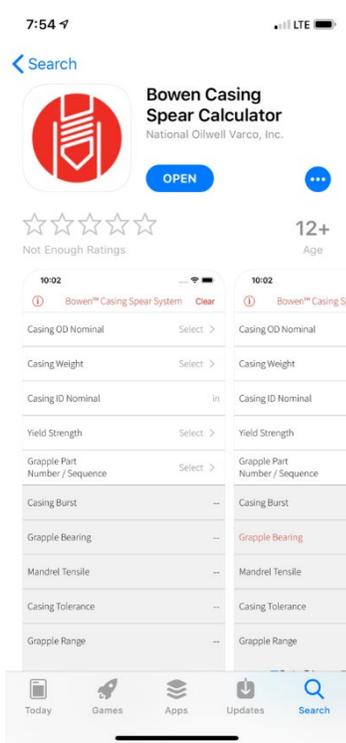


8. Navigate to the Bowen Casing Spear App icon and then click on Request Access.



9. Your application will be reviewed. Subject to approval, you should receive an email indicating a successful software access request.

10. Go to either the Apple App Store or Google Play search for “Bowen Casing Spear”



# Using the Software

1. Click on the Casing OD Nominal Tab

Bowen™ Casing Spear S...
CLEAR
ⓘ

Casing OD Nominal	Select >
Casing Weight	Select >
Casing ID Nominal	in
Yield Strength	Select >
Grapple Part Number / Sequence	Select >
Casing Burst	--
Grapple Bearing	--
Mandrel Tensile	--
Casing Tolerance	--

2. Select the casing size that will be targeted. In this case 13-3/8 in.

Casing OD
DONE

Custom Input      custom in

Casing OD (in)
2.375
2.875
3.5
4
4.5
5
5.5
5.625
5.75
6.625
7

7.625
7.75
8.625
9.625
9.75
9.875
10.75
11.75
11.875
13.375

3. Select the casing weight. In this case 72#

**Casing Weight** DONE

Custom Input      custom lbs/ft

Casing Weight (lbs/ft)

48
54.5
61
68
72
80.7
86

4. Select the casing grade. In this case 110 ksi

**Casing Yield Strength** DONE

Custom Input      custom ksi

Casing Yield Strength (ksi)

65
80
90
95
110
125
140
150

5. Select the casing spear you plan to use. In this case 9283B

← Grapple Part #	
Casing ID: 12.347 Casing Tolerance: 12.184 - 12.511	
9283B	>
17248B	>
27782	>
507184	>
507653	>

6. Select the grapple you intend to use. In this case 030

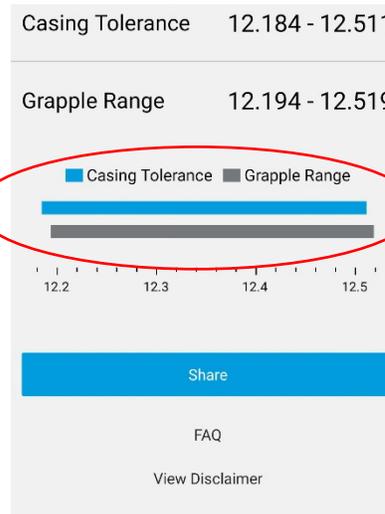
← Grapple Sequence	
Casing ID: 12.347 Casing Tolerance: 12.184 - 12.511	
Seq: 010	Nominal Catch: 12.555 Grapple Range: 12.393 - 12.718
Seq: 013	Nominal Catch: 12.578 Grapple Range: 12.416 - 12.741
Seq: 025	Nominal Catch: 12.184 Grapple Range: 12.022 - 12.347
Seq: 030	Nominal Catch: 12.356 Grapple Range: 12.194 - 12.519
Seq: 032	Nominal Catch: 12.431 Grapple Range: 12.269 - 12.594
Seq: 065	Nominal Catch: 12.387 Grapple Range: 12.225 - 12.55
Seq: 071	Nominal Catch: 12.375 Grapple Range: 12.213 - 12.538
Seq: 090	Nominal Catch: 12.274 Grapple Range: 12.112 - 12.437

7. Review results

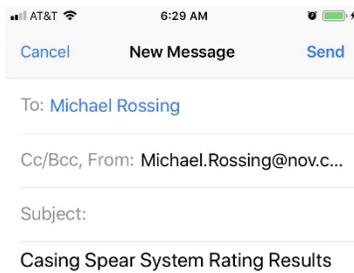
- a. Three failure points will be evaluated
- b. In this example the **Mandrel Tensile** is the risk (marked in red)

Bowen™ Casing Spear S... CLEAR ⓘ	
Casing OD Nominal	13.375 in >
Casing Weight	72 lbs/ft >
Casing ID Nominal	12.347 in
Yield Strength	110 ksi >
Grapple Part Number / Sequence	9283B/030 >
Casing Burst	799 klbs
Grapple Bearing	1,529 klbs
<b>Mandrel Tensile</b>	<b>784 klbs</b>
Casing Tolerance	12.184 - 12.511

- c. The casing tolerance vs grapple range is evaluated for you



9. Share results
  - a. Example of the share screen as well as the results page



**Bowen™ Casing Spear System Calculator Report**

Casing Inputs	
Casing OD Nominal	13.375 in
Casing Weight	72 lbs/ft
Casing ID Nominal	12.347 in
Yield Strength	110 ksi
Casing ID Tolerance	12.184 - 12.511

Grapple Inputs	
Grapple Part Number / Sequence	9283B / 030
Grapple Catch Range	12.194 - 12.519

Mode of Failure	
Casing	799 klbs
Spear Mandrel	784 klbs
Grapple	1,529 klbs



**Bowen™ Casing Spear System Calculator Report**

**Casing Inputs**

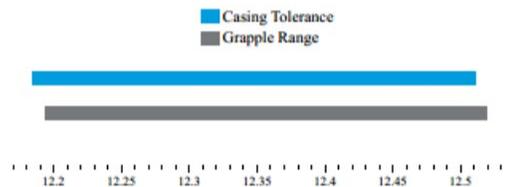
Casing OD Nominal	13.375 in
Casing Weight	72 lbs/ft
Casing ID Nominal	12.347 in
Yield Strength	110 ksi
Casing ID Tolerance	12.184 - 12.511

**Grapple Inputs**

Grapple Part Number / Sequence	9283B / 030
Grapple Catch Range	12.194 - 12.519

**Mode of Failure**

Casing	799 klbs
Spear Mandrel	784 klbs
Grapple	1,529 klbs



The above values are calculated theoretical pull yield strengths and are considered accurate to within +/-20%. All strengths assume straight and steady pulling of a fully engaged round fish. Any irregularities in the fish ID and/or OD, damage to the mandrel, or excessive jarring can reduce the strength substantially. The values are meant to serve as a guide and appropriate safety factors should be applied. Please contact NOV Engineering if there are any questions. The content included herein is for general information only and is not intended for design purposes. NOV makes no claims, promises, guarantees or representations of warranties as to the accuracy, completeness or adequacy of the content and expressly disclaims liability for error and omissions. Individuals accessing this content will make their own determination of how suitable the information and data is for their usage and intent. In no event will NOV be responsible for damages resulting from the use or reliance upon the information and data herein.



10. Easily evaluate your options

- a. You can evaluate various grapples or different spear options by going back to the Grapple Part Number/ Sequence drop down and select other combinations to evaluate improvements

In this example the weak point is the casing now.

← Grapple Part #	← Grapple Sequence	Bowen™ Casing Spear S... CLEAR ⓘ
Casing ID: 12.347 Casing Tolerance: 12.184 - 12.511	Casing ID: 12.347 Casing Tolerance: 12.184 - 12.511	Casing OD Nominal 13.375 in >
9283B >	Seq: 005 Nominal Catch: 12.497 Grapple Range: 12.185 - 12.81	Casing Weight 72 lbs/ft >
17248B >	Seq: 006 <b>Nominal Catch: 12.562</b> <b>Grapple Range: 12.25 - 12.875</b>	Casing ID Nominal 12.347 in
27782 >		Yield Strength 110 ksi >
507184 >		Grapple Part Number / Sequence 507653/006 >
<b>507653 &gt;</b>		<b>Casing Burst 1,868 klbs</b>
		Grapple Bearing 3,500 klbs
		Mandrel Tensile 3,500 klbs
		Casing Tolerance 12.184 - 12.511

Disclaimer:

Calculated values are theoretical yield strengths and are considered accurate to within +/-20%. They assume the worst case scenario based on API tolerance. All strengths assume straight and steady pulling of a fully engaged round fish. Any irregularities in the fish ID/OD, damage to the grapple or mandrel, or jarring can reduce the strength substantially. Ratings are based on Grapple range only. These values are presented without any safety factor. Please contact NOV Engineering if there are any questions.

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