

## Completion Solutions

# RapidStage® frac sleeves and RapidBall™ self-removing balls delivered increased efficiency and cost savings without wellbore intervention

Location: Alaska, US

### Overview

An independent oil and gas operator in Alaska was looking for new ways to help reduce well costs and intervention. The completion design called for a production liner to be run and 11 stages to be stimulated through the target section of a wellbore that was more than 20,000 feet in total measured depth (TMD). Each of the stages would then be fracture stimulated to enhance well production. In the past, this has been done using a plug and perforate completion method. However, due to the remote location, the increased service intensity of this type of completion method, and the need to mill out the composite frac plugs post stimulation, it would mean high completion costs. Additionally, should a wellbore screen out occur and coiled tubing intervention be used to recover from such an event, the costs could be even higher.



RapidBall™ DM self-removing ball technology

CHALLENGES	SOLUTIONS	RESULTS
Remote well location	RapidStage® frac sleeve system	Enabled the fracturing of more than <b>50 stages</b> using an efficient surface ball drop method without any post stimulation intervention
Extended reach wellbore	RapidBall™ DM self-removing frac balls to activate each RapidStage sleeve	RapidBall DM frac balls slowly degraded, ensuring no intervention is required post frac
Method to recover without the use of coiled tubing should the wellbore screen out	RapidBall DM self-removing frac balls	RapidBall DM frac balls will slowly degrade so that another ball can be used for stage isolation once the screen out is flowed back

## Solution

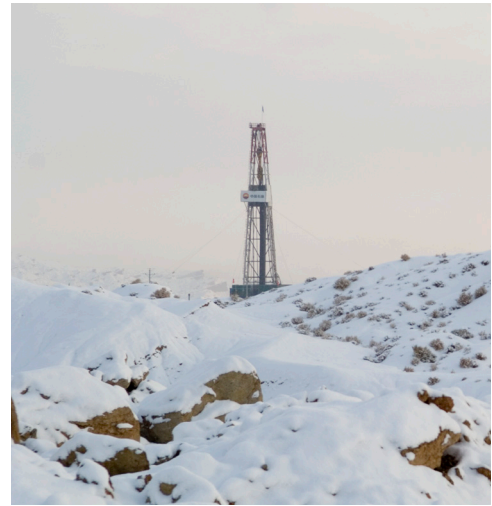
Halliburton proposed RapidStage® frac sleeves in combination with RapidBall™ DM self-removing frac balls to activate each fracturing sleeve. The RapidStage system would allow the 11 individual stages to fracture using a surface ball-drop procedure to activate each sleeve. By using a surface ball-dropping procedure, stimulation can be achieved more efficiently and with less service intensity as compared to the plug and perforate completion method. Dropping balls in sequence from the surface activates each target fracturing sleeve in the RapidStage system, helping eliminate the need for frac pumps to shut down between stages, canceling intervention required by wireline to pump down plugs and perforate, and lowering completion costs since time and materials are reduced.

To activate the sleeves once they have reached their target stage and stimulation is complete, Halliburton recommended RapidBall DM self-removing balls that degrade with time, temperature, and wellbore fluids. Because these frac balls are self-removing, the operator no longer has to make a post-stimulation coiled tubing trip to millout. RapidBall DM frac balls also give the operator a way to recover should a screenout be experienced on a fracturing stage and allow the well to be flowed back for cleanup as the balls slowly degrade. Once flowback operations are completed, another RapidBall DM frac ball can be dropped and the stimulation job completed.

## Result

In the first stage of the wellbore a screenout occurred. The contingency flowback operations had to be put to the test and the well was flowed back for a period of 24 hours to allow it to cleanup from the screenout. After 24 hours, injectivity was reestablished and a second RapidBall DM frac ball was pumped to depth to isolate the target fracturing stage. Stimulation of the stage was then completed.

This process saved the customer a very expensive and potentially difficult coiled tubing intervention to clean out the entire 20,000 foot wellbore. The next 10 stages, using the RapidStage system, were stimulated without issue proving the true efficiency of the system. Once stimulation was completed, wellflow back began and the RapidBall DM frac balls were allowed to degrade once again, saving a coiled tubing cleanup run. In the end, the operator was pleased with the results of the RapidStage system and RapidBall DM self-removing frac balls. The completion system delivered increased efficiency and cost savings without wellbore intervention.



HALLIBURTON