Production Asset Protection Using GIS and Remote Sensing Techniques -
the Shell Nigeria Experience

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SUMMARY

The magnitude of crude theft in the Nigerian oil rich Niger Delta has reached such an
alarming level that a minimum of 150,000 barrels of the national daily crude production are
said to be lost to Oil thieves. Curbing the situation has become a national challenge due to the
organised international nature of the crime and a nightmare to the Oil companies that lose
production (revenues) daily to the crude theft syndicates. Not just that oil is stolen, the act
also leaves behind environment destruction and degradation that sometimes result in major oil
spills, avoidable pipeline repairs and crude supply deferment and force majeure. As a major
player and having suffered a lot of asset/revenue loss with attendant disruption of production
activities, SPDC decided to explore technology solutions to narrow down assets (areas) most
vulnerable to crude theft, using historical spill/illegal bunkering incidents' points and (ii)
using aircraft overflight surveillance, equipped with GPS cameras. This paper is to share how
geo-information (GI) was effectively used to create hotspot maps that led to focused actions at
reducing the menace of crude theft and incessant pipeline vandalism and environmental
degradation. The second part of the paper will focus on how Remote Sensing tools with GIS
data integration were used to identify areas of major pipeline encroachment by squatters, and
subsequent removal of the squatters and illegal structures from SHELL high pressure live oil
and gas pipelines’ right-of-way (RoW) corridor.