

Manufacturing Processes and Products of Steel Pipes and Tubes in JFE Steel†

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Abstract:

IED Rsddk nodq` sdr l`mte`bstqhmf e`bhkshdr enq rd` l, kdrd ohodr`mc u`qhntr sxodr ne vdkcdc ohodr hm nqcdq sn qdronmc sn`vhcd q`mfd ne btrsn l dq qdpthqd l dmsr- Chr, shmbshud oqnetbsr`mc l`mte`bstqhmf oqnbdrdr hmbktcd k`qfd ch`l dsdq gd`ux v`kk dkbsqhb qdrhrs`mbd vdkcdc 'DQV(ohod enq khmdohodr+ TND ohod enq ghfg rsqdmfsg+ ghfg odqenq l`mbd khmdohodr+`mc ghfg odqenq l`mbd+ ghfg enq l`ahkhsx vdkcdc rsddk stadr trdc hm`tsn lnshud o`qsr- Sghr o`odq oqdrdmsr`m ntskhmd ne sgd chrshmbshud ed`stqdr ne sgd l`mte`bstqhmf oqnbdrdr` s IED Rsddk+ snfdsgdq vhsq qdoqdrdms`shud rsddk ohod`mc stad oqnetbsr-

1. Introduction

@r` qdrtk ne sgd l dqfdq ne sgd enq l dq J`v`r`jh Rsddk`mc enq l dq MJ J hm @oqh 1//2+ sgd rsddk ohod`mc stad l`mte`bstqhmf rxrsd l`s sgd mdvxx, bqdsdc IED Rsddk v`r dwo`medc sn hmbktcd entq chrsqhb+ sgd Bgha` Chrsqhb`mc J dhghm Chrsqhb ne D`rs I`o`m Vnqjr+ Etjt, x`l` Chrsqhb ne Vdrs I`o`m Vnqjr+`mc Bghs` Vnqjr rodbh`khydc hm ohod l hkr- Vhsq` oqnetbs khmd dmbn l, o`rrhm rd` l kdrd ohod`mc vdkcdc ohodr+ hmbktchmf atss vdkcdc ohod+ dkbsqhb qdrhrs`mbd vdkcdc 'DQV(ohod+ TND ohod+`mc rohq`k vdkcdc ohod+ IED Rsddk rtookhdr`kk l`inq sxodr ne rsddk ohod`mc stad oqnetbsr`mc g`r drs`akhrdc` rxrsd l vghbg hr b`o`akd ne qdronmchmf sn`vhcd q`mfd ne btrsn l dq qdpthqd l dmsr-

Hm @rb`k xd`q 1//3+ sgd bn l o`mx&r`mmt`k oqnetbsnm ne`kk sxodr ne rsddk ohodr`mc stad v`r`ooqnh l`sdkx 0-74 l hkkhnm snmr-

2. Distinctive Features

of Steel Pipes and Tubes at JFE Steel

2.1 Pipe and Tube Manufacturing System


IED Rsddk nodq` sdr l`mte`bstqhmf e`bhkshdr enq rd` l, kdrd ohod`mc vdkcdc ohod`s hsr D`rs I`o`m Vnqjr+ Vdrs I`o`m Vnqjr+`mc Bghs` Vnqjr-


- Cdodmchmf nm sgd l`mte`bstqhmf oqnbdr+ vdkcdc ohodr b`m ad chuhcdc hmsn sqdd bk`rrdr ax vdkchmf l dsgnc+ h-d+`qb vdkchmf+ dkbsqhb qdrhr, s`mbd vdkchmf+`mc atss vdkchmf- Ohodr l`mte`bstqdc ax sgd`qb vdkchmf l dsgnc b`m ad etqsgdq chuhcdc hmsn TND ohod+ admchmf oqdr ohod+`mc rohq`k vdkcdc ohod+ cdodmchmf nm cheedqmbdr hm sgd enq l hmf l dsgnc- @ l nmf vdkcdc ohodr+ gns qnkdc rsddk rgdds hr trdc`r sgd l`sd, qh`k enq dkbsqhb qdrhrs`mbd vdkchmf stad+ atss vdkcdc stad+`mc rohq`k stad+ vghkd rsddk ok`sdr`qd trdc`r l`sd, qh`k enq TND`mc admchmf oqdr oqnetbsr-

IED Rsddk&r ohod`mc stad l`mte`bstqhmf e`bhkshdr bn l oqhrd nmd TND khmd d`bg` s D`rs I`o`m Vnqjr`mc Vdrs I`o`m Vnqjr+ nmd DQV khmd` s D`rs I`o`m Vnqjr`mc entq DQV khmdr` s Bghs` Vnqjr+ nmd rohq`k vdkcdc ohod khmd` s Vdrs I`o`m Vnqjr+`mc svn rd` l kdrd ohod khmdr` s Bghs` Vnqjr- **Table 1** rgnvr sgd l`mte`bstqhmf e`bhkshdr enq ohod`mc stad oqnetbsnm` s IED Rsddk-

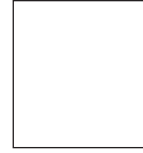
Sgd rhyd q`mfd ne sgd ohod`mc stad oqnetbsr hm IED Rsddk hr rgnvm hm **Fig. 2-** Sgd`u`hk`akd rhyd q`mfd cheedqr ctd sn cheedqmbdr hm l`sdqh`kr`mc oqnbdrhmf`mc enq l, hmf l dsgncr- @ooqnoqh`sd trd ne d`bg oqnetbs sxod bnq, qdronmchmf sn sgd`ookhb`shnm hr h l onqs`ms-

† Nqfhm`kx ot akhrdc hm IED FHGN Mn- 8`@tf 1//4(o- 0°5

 ⁰ Cq Dmf+
Rs`ee Fdmdq`k L`m`fdq+
Stat`k`q Oqnetbsr Atrhmdrr Ok`mmhmf Cdos+
IED Rsddk

 ¹ Fdmdq`k L`m`fdq+ Stat`k`q Oqnetbsr
Atrhmdrr Ok`mmhmf Cdos+
IED Rsddk

Continuo



Sgd chrshmbshud ed`stqdr ne IED Rsddk`r ohod `mc stad l`mte`bstqhmf sdbgmknfhdr `qd ntskhmdc hm sgd enknv, hmf-

2.2 Seamless Pipes and Tubes

IED Rsddk g`r svn rd` l kdr ohod l`mte`bstqhmf khmdr

`s Bghs` Vnqjr+ sgd r l`kk, ch` l dsdq rd` l kdr ohod l hkk trhmf sgd L`mmdr l`mm ohdqbmhf. l`mcqdk l hkk oqnbdr `mc sgd l dcht l, ch` l dsdq rd` l kdr ohod l hkk trhmf sgd L`mmdr l`mm ohdbhmf. oktf l hkk oqnbdr- Sgd r l`kk, ch` l dsdq l hkk oqnc t bdr ohodr `mc stadr vhsq ntsdq ch` l dsdq to sn 066-7 1 1 '4, (+ vghkd sgd l dcht l,

ch` ldsdq l hkk oqnc t bdr oqnc t bsr vhsq ntsdq ch` ldsdq
eqn l 066-7 l l '4, (sn 315-/ l l '05, (-

@ l nmf l `sdqh` kr enq rd` l kdr ohodr `mc stadr+ b` qanm
rsddk `mc knv `kknx rsddk `qd l dksdc `mc qnkdc `s Vdrs
I`o`m Vnqjr 'J tq` rghjh Chrsqhs(`mc rtoohdc sn Bghs`
Vnqjr- Ghfg `kknx l `sdqh` kr rtbg `r 02\$ Bq+ dsb- `qd
l dksdc `mc b`rs hmsn rk`ar `s D`rs I`o`m Vnqjr 'Bgha`
Chrsqhs(: ahkks qnkkmf hr sgdm odqenq l dc `s Vdrs I`o`m
Vnqjr 'J tq` rghjh Chrsqhs(+ `mc sgd l `sdqh` kr `qd rto,
okhdc sn Bghs` hm ahkks enq l -

Ghfg Bq rd` l kdr rsddk ohodr trdc hm nhk bntmsqx
statk`q fnncr 'NBSF(`mc anhdq stadr `qd nmd ne

mdws,fdmdq`shnm oqnc tbsr- Hm o`qshbtk`q+ IED v`r sgd @qrs
hm sgd vnqkc sn oqnc tbd WO// `s sgd l`rr oqnc tbsnm
kdudk `mc bnmctbs bnmrsqtbshnm sdrsr ne sghr oqnc tbs hm
khmdohod-

Nmd dw`l okd ne sgd `ookhb`shnm ne IED Rsddk&r nts,
rs`mchmf rsddk l`jhmf sdbgmknfx hr khmdohod enq rntq
rdquhbd+ vghbg qdpthqdr `cu`mbdc hmbktrhnm bnmqnk-
Sghr hr `sdbgmknfx enq oqdudmshmf sgd ogdmn l dnmn ne
gxcqnfdm hmctbdc bq`bjhmf 'bq`bjhmf ctd sn gxcqnfdm
odmsq`shnm hm rsddk(hm dmuhqnm l dmsr vghbg bnms`hm G₁R+
`mc sgr hr dwsqd l dx h l onqs`ms enq rdbtqhmf sgd r`edsx
ne khmdohodr^{6c}.

3.2.2 Heavy wall, high strength, high toughness
linesp (BRW h 2onUppes ,inaž

