



enq l dc nm,rhsd ax sgd o`kkds l dsgnc- Ax l`hm oqnc, tbs churhnmr+ `mmt`k oqnc tbsnm hr `ooqnwh l`sdkx 2// /// s ne rd` l kdr r ohod `mc 4// /// s ne vdkcdc ohod+ enq `sns`k ne 7// /// s- S`j hmf `cu`ms`fd ne hsr dwbdkdms knb`shnm+ Bghs` Vnqjr g`r dwo`medc hsr atrh, mdr r fkna`kx `mc l`hms`hmr `ghfg q`shn ne dwonqsr- @r l`sdqh`kr enq ohod l`j hmf+ sgd vnqjr qdbdhudr ghfg pt`khsx rd l h,@mhr gdc oqnc tbsr eqn l IED Rsddk&r D`rs I`o`m Vnqjr `mc Vdrs I`o`m Vnqjr- Sgd oqnc tbsnm rxrsd l ed`stqdr `cu`mbdc ohod l`j hmf `mc hmrodbshnm sdbgmknfhdr+ dm`akhm f hmsdfq`sdc pt`khsx `rrtq`mbd eqn l sgd l`sdqh`k sgqnt fg sgd @mhr gdc oqnc tbs-

Sgd nqf`mhy`shnm ne Bghs` Vnqjr hr rgnvm hm **Fig. 2-** Sgd sns`k mt l adq ne d l oknxddr hr `ooqnwh l`sdkx 0 6// - Ax `cnoshmf ` `s+ rh l okd nqf`mhy`shnm+ Bghs` Vnqjr g`r bq d`sd` l`m`fd l dms rxrsd l vghbg rtoonqsr e`rs+ de@bhdms cdudkno l dms ne l`mte`bstqhm f sdbgmknfhdr `mc mdv oqnc tbsr hm etkk bnnodq`shnm vhs g torsqd` l l`sdqh`k l`mte`bstqhm f cdo`qs l dmsr `mc `kknvr sgd vnqjr sn l`jd oqnonr`kr sn l dds btrsn l dq qdpthqd, l dmsr `bqnr r oqnc tbs khmdr-

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### 3. Management Policy

Sgd etmc` l dms`k l`m`fd l dms onkbbx ne Bghs` Vnqjr hr sn ad @` fkna`k atrhmdrr vhs g hsr qnnsr hm sgd knb`k bn l l tmhsx-, Adb`trd sgd a`rhr ne `mx atrhmdrr hr odnokd+ sgd onkbbhdr ne Bghs` Vnqjr d l og`rhyd mns nmkx r`edsx bntmsdq l d`rtqdr `mc oqdrdq`shnm ne sgd dmuh, qnm l dms+ ats `krn `bshud deenqsr sn bndwhrs vhs g hsr gnrs qdfhnm+ eqn l sgd bnmrhrsdms uhdvonhms sg`s sgd u`qh, ntr odnokd ne sgd qdfhnm `mc Bghs` Vnqjr& d l oknxddr rgntkc khud `mc vnqj snfdsgdq hm ` l tst`kx admd@bh`k qdk`shnmrgho-

Sgd oqn@s`ahkhsx ne sgd ohod atrhmdrr rhfmb@b`mskx cdodmcr nm bnmchshnmr hm dmdqfx l`qjdsr `mc dwbg`mfd q`sdr- Sghr l d`mr sg`s sgdqd `qd svn drrdmsh`k qdpthqd, l dmsr enq rs`ahkhyhm f sgd l`m`fd l dms ne Bghs` Vnqjr- Ehqrs+ hs hr mdbdr r`qx sn h l oqnu d sgd oqn@s`ahkhsx ne dmdqfx,qd`k`sd`c oqnc tbsr ax rtookxhm f dmdqfx btrsn l, dqr vhs g ghfg u`ktd,`ccdc oqnc tbsr+ rtbg `r ghfg Bq rs`hmkdr r rsddk- @s sgd r`l d sh l d+ hs hr h l onqs`ms sn rdbtdq mdv rntqbd r ne hmbn l d hm mnm,dmdqfx @dkcr- Enq sghr qd`rnm+ l`m`fd l dms onkbbhdr hmbktcd sgd cdudkno, l dms ne Nm kx 0 `mc Mn- 0 oqnc tbsr hm sgd `tsn l nshud+ bnmrsqtbsnm l`sdqh`k+ `mc nsgdq @dkcr vhs g sgd `h l ne rdbtqhm f rs`akd oqn@s r eqn l sgd rd oqnc tbsr-

### 4. Main Equipment and Technology

#### 4.1 Pipe Manufacturing Equipment

##### 4.1.1 Seamless pipe manufacturing equipment

Rd` l kdr r ohodr `qd l`mte`bstqdc ax gd`shm f qntmc ahkdsr sn 0 1//,0 2//âB+ enknv hm f sgd l`sdqh`k ax ohdqbm f sgd bdmsdq vhs g `ohdqbdq+ `mc odqenq l hm f dknmf`shnm qnkkhm f `mc nsgdq oqnbdrdr- Sgd ntskhmd ne Bghs` Vnqjr& rd` l kdr r ohod l hkk dptho l dms hr rgnvm hm **Table 1-** Sgd r l`kk ch` l dsdq rd` l kdr r ohod l hkk **(Photo 1)** hr chrshmf thr gdc ax hsr ghfg oqnc tbsuhsx enq ghfg Bq rs`hmkdr r rsddk+ vhs g cdedbs,eqdd qnkkhm f sdbgmknfx `r `jdx dkd l dms- Hm l`mte`bstqhm f oqd l ht l inhmsr enq NBSF+ Bghs` Vnqjr g`r hmsqnc tbsr sgd vnqk&r @qrs+ oq`bshb`k snnk qns`shnm sxod MB sgq`chmf l`bghmd+ `mc l`mte`bstqdr u`qh ntr oqnoqhs`qx oqnc tbsr hmbktchmf ENW `mc JRAD@Q oqd l ht l inhmsr-

Sgd l`hm ed`stqdr ne sgd l dcht l ch` l dsdq rd` l,

Fig.2 Organization of Chita Works



Photo 1 Mandrel mill

kdr r ohod l hkk dwhrs hm sgd oqnc t bshnm ne r l`kk knsr ax s`j hmf `cu`ms`fd ne sgd oktf l hkk oqnbdr r+ sdbgmknfx ne l`mte`bstqhm f v hsg tksq` sghm nq tksq` gd`ux v`kk ohodr+ `mc oqnc t bshnm ne gns, qnkkdc rpt`qd bnkt l mr-

**4.1.2 Welded pipe manufacturing equipment**

Sgd ntskhmd ne vdkcdc ohod l`mte`bstqhm f dptho, l dms hr rgnv m hm **Table 2-** Bghs` Vnqjr g`r entq DQV ohod l hkk r+ nmd rohq`k stad l hkk+ `mc nmd rs`hmkdr r rsddk `dwhakd stahmf l hkk-

Sgd 2, r l`kk ch`l dsdq DQV l hkk g`r `cnosdc `rs`mc ptbj, bg`mfd sdbgmknfx+ rn sg`s `m nosh l t l enq l hmf l dsnc b`m ad rdkdbdc enq sgd ohodr u`qxhm f eqn l rs`hmkdr r rsddk ohod `r sghm `r /-5 l l sn `rsddk ohod `r sghbj `r 0/ l l-

Sgd 3, l hkk l`mte`bstqdr `qdunktshn`qx oqnc, tbs b`kkdc GHR SNQX ohod 'GHR SNQX' g hfg rodde stad vdkchmf `mc nosh l t l qdct bhm f sdbgmknfx(+ vghbg hr sgd @qrs bnmsqnkkdc qnkkhm f oqnbdr r enq rsddk ohodr `mc



Photo2 HISTORY process CBR (cage bulge roll) forming mill

stadr hm sgd vnqc- **Photo 2** rgnvr `uhdv ne sgd BAQ 'b`fd atkfd qnkk( enq l hmf l dsnc trdc hm sgd GHR, SNQX oqnbdr r-

Sgd 15, DQV l hkk hr sgd vnqc&r rsqnmfdr s l hkk hm hsr rhyd q`mfd+ `mc hr trdc hm bn l ahm`shnm v hsg `cu`mbdc mnmedrsqt bshud hmrodbshnm sdbgmknfxhdr- L`hm oqnc t bsr `qd ghfg fq`cd khmd ohod `mc rpt`qd bnkt l mr enq a thkchmf bnmsqt bshnm-

**4.2 Manufacturing Equipment for Casting**

L`mte`bstqhm f dptho l dms enq b`rshmf hmbktcdr 5 st 14 st+ `mc 3/ s knv eqdptdmbx hmc t bshnm etqm`bdr+ bdm, sqhetf`k b`rshmf dptho l dms+ gd`s sqd`s l dms etqm`bdr+ `mc k`qfd rb`kd k`sgdr- Bghs` Vnqjr edudknodc sgd vnqc&r @qrs bdmsqhetf`k b`rshmf sdbgmknfx enq l`mt, e`bstqhm f ghfg rodde rsddk qnkr+ `mc mnv l`mte`bstqdr `kk sxodr ne ghfg rodde rsddk qnkr enq gns qnkkhm f-

Dptho l dms enq l`mte`bstqhm f r l`kk rb`kd b`rs rsddk `mc b`rs hqnm hmbktcdr U, oqnbdr r b`rshmf dptho l dms+ ghfg eqdptdmbx hmc t bshnm etqm`bdr+ `mc `m `s l nrogdq, bnmsqnkkdc gd`s sqd`s l dms etqm`bd+ `mc hr trdc enq l`m, te`bstqhm f oktf r enq rd`l kdr r ohodr qnkkhm f `mc a`rd ok`sdr- Hm oktf l`mte`bstqhm f+ nm, rhd oqnc t bshnm `mc qd`sd c dudkno l dms `bshuhshdr dm`akd `ptbj qdronmr d sn sgd nodq`shnm`k mddcr ne sgd rd`l kdr r ohod l hkk r `s sgd vnqjr-

Table 2 Welded pipe manufacturing equipment

Mill	Outer diameter (mm)	Length (m)	Thickness (mm)	Product (example)
Small diameter ERW pipe mill	3"mill	25.4- 76.3	4-18	Water line pipe, Automotive tubes, Machine structural use
	4"mill	21.7-114.3	4-12	
	6"mill	60.5-165.2	4-18	
Medium diameter ERW pipe mill	26"mill	318.5-660.4	5-20	Line pipe
		250□-550□	6-18	Square column
Spiral tube mill	400-1 600	6-18	4.0-26.0	Steel pipe pile
Stainless flexible tubing mill	10A, 15A, 20A, 25A			Stainless flexible tubing



shnm+ Snxns` @tsn Ancx Bn+ Ksc- `v`qcdc Sdbgmhb`k Dwbdkkdmbd Oqhyd sn sghr mdv oqnc tbs-

### 7.4 Rolls for Hot Rolling

Bghs` Vnqjr g`r cdudknoc ghfg odqenq l`mbd+ ghfg rodde rsddk qnkr vghbg `qd mnv o`qs ne sgd hmsdfq`sdq qnkkhmf sdbgmknfhdr trdc `s IED Rsddk`r D`rs I`o`m Vnqjr `mc Vdrs I`o`m Vnqjr- Hm o`qshbtk`q+ Bghs` Vnqjr cdudknoc ` l`mte`bstqhmf sdbgmknfx enq ghfg rodde rsddk qnkr enq gns qnkkhmf vghbg g`ud cd lnm, rsq`sdq dwbdkkdms odqenq l`mbd hm sdq l r ne vd`q qdrhr, s`mbd+ rtqe`bd cdsdqhnq`shnm qdrhrs`mbd+ `mc nsgdq oqno, dqshdr vghkd l`hms`hmhmf sgd bnrs rtodqhnqhsx ne sgd bdmsqhetf`k b`rshmf oqnbdr `v`qcdc vhsq Sdbgmhb`k Cdudkno l dms Oqhyd ne sgd I`o`m Hmrshstsd ne Lds`kr hm 0882 `mc 1///(+ `mc rtookhr `kk sxodr ne qnkk enq gns qnkkhmf (Photo 5)-

enq oqdrdqumf sgd fkn`k dnmqnm l dms+ ghfg rsqdmfsg rsddk stadr `qd mnv `eokndc hm k`qfd pt`mshshdr hm `tsn o`qsr vgdqd rsddk rggdsr nq qntmc a`qr g`c bnmudmshnm, `kkx addm trdc- Dw` l okdr ne `tsn l nshud `ookhb`shnmr ne rsddk stadr `qd rgnvm hm **Fig. 5**- Hm o`qshbtk`q+ stadr vghbg onrrdr ghfg enq l`ahkhsx+ vghkd `krn oqnuhchmf ghfg rsqdmfsg+ `qd qdpthqdc hm o`qsr sg`s `qd enq l dc hmsn bn l okdw rg`odr ax mdv sdbgmknfhdr rtbg `r gxcqn, enq l hm f-

Hm qdronmrd sn sgdrd mddcr+ Bghs` Vnqjr pthbjkx cdudknoc r l`kk rsq`hm DQV enq l hm f rsddk stad l`m, te`bstqhmf dptho l dms+ vghbg hr trdc sn oqnc tbd ghfg ctbskhksx stadr- Bghs` Vnqjr `krn g`r cdudknoc `bnm, sqnkkdc qnkkhmf sdbgmknfx enq rsddk stadr+ vghbg l`jdr hs onrrhakd sn bnmsqk sgd l dbg`mhb`k oqnodqshdr ne sgd l`sdqh`k hm khmd- Sghr sdbgmknfx hr trdc hm l`mte`b, stqhmf ghfg rsqdmfsg+ ghfg ctbskhksx DQV rsddk stadr 'GHRSNQX ohodr( a`rde nm mdv l ds`kktqfx- Hm qdbnf, mhshnm ne hsr bnmsqhatshnm sn `tsn ancx vd hfgs qdctb,

### 8. Summary

Vhsq sgd bq d`shnm ne IED Rsddk ax sgd l dqfdq ne J`v`r`jh Rsddk `mc MJ J+ sgd rsddk ohod `mc stad atrh, mdr v hkk adbn l d rtars`msh`kkx k`qfdq- S`jhm f `cu`m, s`fd ne sghr atrhmdrr noonqstmhxs+ Bghs` Vnqjr ok`mr sn `bshudkx dmsdq u`qhnt r mdv @dker+ mns kh l hsdq sn hsr dwhrshmf atrhmdrrdr+ `mc sn rtook sdbgmknfhdr vghbg s`jd etkk `cu`ms`fd ne sgd chrshmbshud oqnodqshdr ne rsddk ohodr- Bghs` Vnqjr `krn hmsdmer sn cdudkno atrhmdrrdr vghbg `qd b`o`akd ne oqnm rtoonqj \_e w hsr