

**INDIAN BUREAU OF MINES  
MINERALS DEVELOPEMMENT AND REGULATION DIVISION**

**MCDR INSPECTION REPORT**

**Gandhinagar regional office**

**Mine file No :** RAJ/UDP/LEAD-ZINC-4

**Mine code :** 34RAJ26005

- (i) Name of the Inspecting : **J003** ) **Jangid G K**  
Officer and ID No.
- (ii) Designation : Regional Controller Mines
- (iii) Accompanying mine : Shri Shashi Bhushan Shukla, Head Geology  
Official with  
Designation
- (iv) Date of Inspection : 03-JUN-22
- (v) Prev.inspection date : 19-JAN-22

**PART-I : GENERAL INFORMATION**

1. (a) **Mine Name** : **BAROI**
- (b) **Registration NO.** : **IBM/421/2011**
- (c) Category : A Mechanised
- (d) Type of Working : Underground
- (e) Postal address
- State : RAJASTHAN
- District : UDAIPUR
- Village : ZAWAR
- Taluka : SARADA
- Post office : ZAWAR MINES
- Pin Code : 313901
- FAX No. : 0294-2412545
- E-mail : arun.mishra@vedanta.co.in
- Phone : 0294-6604120
- (f) Police Station : ZAWAR
- (g) First opening date : 01-DEC-73
- (h) Weekly day of rest : MON
2. Address for : PO- ZAWAR  
correspondance : DISTT- UDAIPUR  
RAJASTHAN
3. (a) Lease Number : RAJ1725
- (b) Lease area : 816
- (c) Period of lease : 80
- (d) Date of Expiry : 31-MAR-30
4. Mineral worked : LEAD & ZINC ORE Main

## 5. Name and Address of the

Lessee : Hindustan Zinc Ltd  
 Yashad Bhavan Udaipur  
 UDAIPUR RAJASTHAN  
 Phone:  
 FAX :

Owner : Sri Arun Mishra  
 Yashad Bhavan, Udaipur  
 Rajasthan UDAIPUR  
 RAJASTHAN  
 Phone:  
 FAX : 0294-2412545

Agent : SRI SANDEEP NARADE  
 Zawar Mines, Udaipur  
 rajasthan UDAIPUR  
 RAJASTHAN  
 Phone: 97993 97755  
 FAX : 0294-423430

## Mining Engineer

Name : Shri Laxman Chundawat, Full Time  
 Qualification : B.E in Mining & 06 Year Experience  
 Appointment/ : 25-APR-21  
 Termination date

## Geologist

Name : Sri Somdeb Dutta Mal, Full Time  
 Qualification : M.Sc. (Geology)  
 Appointment/ : 31-JAN-19  
 Termination date

## Manager

Name : Shri Upendhar Rapolu  
 Qualification : B. tech. in Mining Engineering  
 Appointment/ : 18-MAY-21  
 Termination date

6. Date of approval of Mining	:	Mining Scheme rule 12 MCDR1988	15-SEP-03
Plan/Scheme of Mining		Modif. approved Mining Scheme	16-AUG-05
		MP modif under 17(3) MCR 2016	17-MAY-19
		MP review under 17(1) MCR 2016	17-DEC-19
		MP modif under 17(3) MCR 2016	15-JUL-21

## PART - II : OBSERVATION/COMMENTS OF INSPECTING OFFICERS

## Exploration :

Sl.No.	Item	Proposals	Actual work	Remarks
1a	Backlog of previous year	Total 66000m with Surface drilling 16000m (16 boreholes) and Underground drilling 50000m (897 boreholes) was backlog of 2020-21.	Surface drilling 13089m (17 boreholes) and Underground drilling 43714m (462 boreholes) carried out during the year 2020-21.	
1b	Exploration over lease area for geological axis 1 or 2	Total drilling of 57000m with Surface drilling 17000m (15 boreholes) and Underground: 40000m (255 boreholes) proposed.	Total 66297.9m drilling was carried out with Surface drilling of 23776.9m (27 boreholes) and Underground drilling of 42521m (310 boreholes)	
1c	Exploration Agencies and Expenditure in lakh rupees during the year	No specific proposal about drilling agency.	Surface Exploration by MAPL, TDMA and Underground Exploration by EFMCP, TDMA Expenditure involved for underground drilling was 106302500/-	
1d	Balance area to be explored to bring Geological axis in 1 or 2	G1 (14.04 Ha), G2 (4.44Ha), G3 (6.21Ha) and Total-24.69Ha for Baroi mines, whereas Zawar lease area is 1537.91ha.	Area covered under G1 (14.25 Ha), G2 (4.87Ha), G3 (7.08Ha) and Total-26.2Ha with actual holes-3527 for the Baroi mines.	
1e	Balance reserve as on 01/04/20	The position of reserve and resources as on 01/04/2022 for Zawar lease is 111- 4.25 mt, 122- 3.47 mt, 221- 7.68 mt and 222- 3.53 mt, 333- 22.54 mt	The position of reserve and resources as on 01/04/2022 for Zawar lease is 111- 4.25 mt, 122- 3.47 mt, 221- 7.68 mt and 222- 3.53 mt, 333- 22.54 mt	

1f	General remarks of inspecting officers on geology, exploration etc	Nil	Nil
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Development :

Sl.No.	Item	Proposals	Actual work	Remarks
2a	Location of development w.r.t. lease area	A total of 18300m (horizontal and vertical) development has been proposed.	During the year a total of 15659m (Horizontal and vertical) development has been achieved.	Equipment delayed & Poor ventilation affected development progress, as reported by mines management.
2b	Separate benches in topsoil, overburden and minerals (Rule 15)	Not applicable as mining operation has been proposed through UG Mining Method.	Not applicable.	
2c	Stripping ratio or ore to OB ratio	Not applicable being a UG mining operation. However ROM Ore to waste handled ratio is $1554465/442900 = 3.50$	Not applicable.	
2d	Quantity of topsoil generation in m3	No proposal of top soil generation during the year.	No top soil has been generated during the year.	
2e	Quantity of overburden generation in m3	A total of 153333m3 of waste has been proposed to generate through UG development	A total of 138296 m3 of waste has been generated.	
2f	General remarks of inspecting officers on development of pit w.r.t. type of deposit etc	Nil	Nil	

Exploitation:

Sl.No.	Item	Propasals	Actual work	Remarks
3a	Number of pit proposed for production	A total of 12 Stope blocks at different level has been proposed for stoping operation.	Stoping operation has been carried out at 19 stope blocks.	
3b	Quantity of ROM mineral production proposed	1800000t	1554464t	
3c	Recovery of sailable/usable mineral from ROM production	100%	Recovery from is around 120% due to dilution and side wall colapsed.	
3d	Quantity of mineral reject generation	Mineral Reject generation- 1458000t	Entire ROM is subject to beneficiation. A quantity of 1464462t (mill tailing) has been reported as mineral reject.	
3e	Grade of mineral rejects generation and threshold value declared.	Not applicable as no proposal.	The grade of mil tailing reported was 0.38% (0.25% + 0.13%) % (Pb+Zn)	
3f	Quantity of sub grade mineral generation.	No proposal of Sub-grade generation.	Not applicable.	
3g	Grade of sub grade mineral generation	Not applicable.	Not applicable.	
3h	Manual / Mechanised method adopted for segregating from ROM	No proposal of manual/mechanised segregation and entire ROM is subject to beneficiation.	Entire ROM is being beneficiated.	
3i	Any analysis or beneficiation study proposed and carried out for sub grade mineral and rejects.	No proposal of any fresh beneficiation study. However, beneficiation facility of 4.8 mtpa is already in place within Mine boundary.	Beneficiation of ROM is being carried out as per proposal for despatching to smelter plant at Debari and Chanderia.	

3j	Provision of drilling and blasting in mineral benches	Drilling pattern for development in ore and rock- Burn Cut method. Drilling pattern in Stopes- Ring drilling with parallel hole drilling.	Drilling and blasting has been carried out as per proposal in UG development and stopes.
3k	Provision of mining machineries in mineral benches	Twin Boom Jumbo, Loaders, LPDT, Grader, scaler and utility vehicles etc. has been proposed for mine development and stoping operation.	Deployment of Mining machinery has been found to be as per proposal in UG operations.
3l	Whether height of benches in overburden and mineral suitable for method of mining proposed in MP/SOM	Not applicable being a UG mining operation.	Not applicable. But CB Decline, NB Decline, Adit1, Adit2, Adit3 and HM decline are there along with ore drives, cross cuts, raises etc for complying the method of mining proposed.
3m	Total area covered under excavation/pits	Not applicable being a UG mining operation.	Not applicable.
3n	Ore to OB ratio for the pit/mine during the year.	Not applicable.	ROM Ore to waste handled ratio is 1554465/442900 = 3.50 for the year.

3o	Total area put in use under different heads at the end of year	Mining-36.63ha, Mineral storage-3.95ha, Ben. Plant-9.46ha, Township-37.95ha, Tailing pond-119.52ha, Roads-10.86ha, Infrastructure-62.68ha, Waste dump-10.57ha, Others-28.61ha, Total-320.23ha	Mining-36.63ha, Mineral storage-3.95ha, Ben. Plant-9.46ha, Township-37.95ha, Tailing pond-119.52ha, Roads-10.86ha, Infrastructure-62.68ha, Waste dump-10.57ha, Others-28.61ha, Total-320.23ha
3p	Production of ROM mineral during the last five year period as applicable	2021-2022_1800000t, 2020-2021_1500000t, 2019-20_1460000t, 2018-19_1000000t, 2017-18_850000t	Achieved production from Baroi from 2017-18 to 2021-2022 is 714198t, 999991t, 1180841t, 1402163t and 1554464t respectively.
3q	General remarks of inspecting officers on method of mining etc.	Nil	Nil

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#### Solid Waste Management - Dumping:

Sl.No.	Item	Propasals	Actual work	Remarks
4a	Separate dumping of topsoil, OB and mineral rejects (Rule 32,33)	No proposal of top soil and Mineral Reject generation. OB/waste is proposed to dispose in UG stopes as well as for tailing dam construction.	Top soil and OB has not been generated during the reporting year. Minertal reject generated during the year has been dumped as per proposal in tailing pond.	Mill tailing of 1464462MT of 0.38% (Pb+Zn) has been reported as Mineral reject.

4b	Location of topsoil, OB and mineral reject dumps	No proposal of top soil and waste generation. OB/waste is proposed to dispose in UG stopes as well as for tailing dam construction.	Top soil and waste has not been generated during the reporting year. MR generated during the year has been dumped as per proposal.
4c	Number of dumps within lease area and outside of lease area	No proposal of waste dumping within Mine boundary.	No waste dumping within Mine boundary of Baroi Mine.
4d	Location of dumps w.r.t. ultimate pit limit (Rule 16)	Not applicable as Mining operations are being carried out through UG mining method.	Not applicable.
4e	Number of active and alive dumps.	No proposal.	Not applicable.
4f	Number of dead dumps.	No proposal.	Not applicable.
4g	Number of dumps established.	No proposal.	Not applicable.
4h	Whether Retaining wall or garland drain all along dumps are there.	No proposal.	Not applicable.
4i	Length of Retaining wall or garland drain all along dumps	No proposal.	Not applicable.
4j	Number of settling ponds	No proposal.	Not applicable.
4k	Specific comments of inspecting officer on waste dump management	No proposal.	Nil

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**Solid Waste Management - Backfilling:**

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Sl.No.	Item	Propasals	Actual work	Remarks
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5a	Status of part or full extraction of mineral from mined out area before starting backfilling.	Backfilling or waste dumping in UG voids has been proposed.	Dumping of waste has been carried out in minedout UG stopes after complete recovery of ROM ore.
5b	Area under backfilling of mined out area	Voids of 221800 cum being filled in an underground stope mining.	A quantity of 295618MT has been disposed in UG stopes to fill the voids.
5c	Concurrent use of topsoil for restoration or rehabilitation of mineral out area (Rule 32)	No proposal of top soil generation during reporting year.	No top soil has been generated during the year.
5d	Total area fully reclaimed and rehabilitated	No proposal of full reclamation and or rehabilitation	Not applicable.
5e	General remarks of inspecting officers on backfilling and reclamation etc.	No proposal.	Nil

#### Progressive Mine Clousre Plan:

Sl.No.	Item	Propasals	Actual work	Remarks
6a	Whether Annual report on PMCP submitted on time and correctly. Rule 23 E(2).	As per rule 26(2) of MCDR, 2017, PMCP report to be submitted for previous year by 1st July.	Annual PMCP report for reporting year i.e. 2021-22 has been submitted on 28/05/2022	
6b	Area available for rehabilitation (ha) .	Nil	Nil	
6c	afforestation done (ha).	5000 saplings within lease area.	5000 within lease area.	
6d	No. of saplings planted during the year	5000nos	5000nos	
6e	Cumulative no .of plants	Nil	442625 saplings so far	

6f	Any other method of rehabilitation	No specific proposal of any other method of rehabilitation	Plantation has been carried out as per proposal.
6g	Cost incurred on watch and care during the year	No specific proposal on cost of watch and care during the year	As reported, approximately Rs 52087469/-
6h	Compliance on reclamation and rehabilitation by backfilling (i) Voids available for backfilling ( L x B x D	Underground Exhaust stopes of 60 M(L) X 5 M(W) X 60 M(H) covering 300000m3 of voids.	Underground Exhausted stopes of 60 M(L) X 5 M(W) X 60 M(H) covering 221800m3 of voids.
6i	Compliance on reclamation and rehabilitation by backfilling (ii) Voids filled by waste / tailings	No Proposal.	Proposal in PMCP (in m3), Actual waste separated in UG 442900t.
6j	Compliance on reclamation and rehabilitation by backfilling (iii) Afforestation on backfilled area	No Proposal.	Not applicable.
6k	Compliance on reclamation and rehabilitation by backfilling (iv) Rehabilitation by making water reservoir	No Proposal.	Not applicable.
6l	Compliance on reclamation and rehabilitation by backfilling (v) any other specific means.	No Proposal.	Not applicable.
6m	Compliance of rehabilitation of waste land within lease (i) afforestation	No Proposal.	Not applicable.

6n	Compliance of rehabilitation of waste land within lease (ii)Area rehabilitation (ha)	Plantation.	Plantation.
6o	Compliance of rehabilitation of waste land within lease (iii)Method of rehabilitation	Plantation.	Plantation.
6p	Compliance of environmental monitoring (core zone and buffer zone)	Provision of environment monitoring stations has been given.	Environment monitoring parameters are found to be within permissible limit.
6q	General remarks of inspecting officers on PMCP compliance and progressive closure operations etc.	No Proposal.	Nil

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Mineral Conservation:

Sl.No.	Item	Propasals	Actual work	Remarks
7a	ROM Mineral dispatch or grade-wise sorting within lease area	No specific proposal of grade wise sorting and complete ROM brought on surface for beneficiation.	Complete ROM ore is being transported to Ore beneficiation plant located within lease area from underground stopes.	
7b	Method of grade-wise mineral sorting i.e. manual or mechanical.	Not applicable as no grade wise sorting.	Not applicable.	
7c	Different grade of mineral sorted out at mines.	No proposal.	Not applicable.	

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7d	Any beneficiation process at mines .	4.8MTPA Beneficiation plant has been installed within the lease area. The process includes mainly crushing and grinding of ROM, Classification , differential flotation cell etc.	Beneficiation has been observed as per proposal and located in lease area for all 4 mines.
7e	General remarks of inspecting officer on Mineral conservation and beneficiation issues	Nil	Nil

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**Environment :**

Sl.No.	Item	Propasals	Actual work	Remarks
8a	Separate removal and utilization of topsoil (Rule 32)	No proposal of top soil generation.	Not applicable.	
8b	Concurrent use or storage of topsoil	Not applicable as no proposal.	Not applicable.	
8c	Separate dumps for overburden, waste rock, rejects and fines (Rule 33)	No proposal of Reject and fines generation. Waste has been proposed to dispose in UG stopes as well as for tailing dam construction.	Separate Reject and fines dumps are not there. Waste has been disposed as per proposal to fill the voids.	

8d	Use of overburden, waste rock, rejects and fines dumps for restoring the land to its original use	No proposal of use of waste rock for restoring the land to its original use. However, waste rock is proposed to dispose in stopped out area.	U/G stoped out area has been utilized for waste dumping purpose.
8e	Phased restoration, reclamation and rehabilitation of lands affected by mining operations (Pits, dumps etc)	No proposal.	Not applicable.
8f	Baseline information on existence of plantation and additional plantation done (Rule 41)	Base line 437625 Plantation with additional 5000 during the year.	Current Cumulative 439625 Actual Addition 5000 with 90% of the plants survival.
8g	Survival rate	No specific proposal of for survival rate.	80%
8h	Water sprinkling on roads to control airborne dust	To control the air born dust particle, water sprinkling has been proposed over the roads by water tanker.	Water sprinkling has been observed with fixed water sprinklers at stock pile area with total stretch of 180m long. Two Water tankers (capacity 10KL) sprinkling water on haul roads to control airborne dust due to mining activity.
8i	General remarks of inspecting officer on aesthetic beauty in and around mines area	Nil	Nil

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Compliance of Rule 45:

Sl.No.	Item	Propasals	Actual work	Remarks
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9a	Status of submission of Monthly and Annual returns	Monthly and annual returns to be submitted as per rule 45 of MCDR within due date.	Monthly and annual returns have been submitted within due date for reporting year.
9b	Scrutiny of Annual return for information on Mining Engineer, Geologist and Manager	Shri Upendhar Rapolu, Manager is B.E in Mining with DOA-18.05.2021, Shri Somdeb Dutta Mal, Geologist is MSc in Applied Geology with DOA-25.01.2019 and Shri Laxman Chundawat, Mining Engineer is B.E in Mining with DOA-04.10.2020	Mine Manger, Mining engineer and Geologist are appointed.
9c	Scrutiny of Annual return on land use pattern for area under pits, reclaimed area, dumps etc.	Mining-46.36ha, Mineral storage-4.73ha, Ben. Plant-23.82ha, Township-38.95ha, Tailing pond-159.41ha, Roads-10.86ha, Infrastructure -66.88ha, Waste dump-0.50ha, Others-28.61ha and Total-380.12ha	Land Use pattern is filled for the Zawar lease having four different mines under Mines Act. Mining-46.36ha, Mineral storage-4.73ha, Ben. Plant-23.82ha, Township-38.95ha, Tailing pond-159.41ha, Roads-10.86ha, Infrastructure-66.88ha, Waste dump-0.50ha, Others-28.61ha and Total-380.12ha
9d	Scrutiny of Annual return on afforestation	Afforestation done-over 4 Ha area as (Gap Filling and No. of Saplings were 1000.	Common for Zawar lease having one mining plan for all four different mines.

9e	Scrutiny of Annual return on mineral reject generation (Grade and quantity)	Quantity of 1093142 t reported with Grade of 0.38 % (Pb+Zn)	The quantity of Mineral Reject furnished is quantity of mill tailing.
9f	Scrutiny of Annual return on ROM stock and/or graded ore	ROM Closing stock at Mine head- 0 and gradewise closing stock at Mill: 12430 MT	The information furnished is found to be in order.
9g	Scrutiny of Annual return on sale value, Ex. Mine price and production cost	Sale of mineral is not there and it is captive use of mineral for metal extraction. Ex. Mine Price & Production cost Rs. 4419.21 per tonne.	Information furnished appears to be corrected.
9h	Scrutiny of Annual return on fixed assets	Value of fixed asset furnished is Rs. 1335864981/-	The value of fixed asset furnished appears to be in order.
9k	Scrutiny of Annual return on mining machineries	Rock Drill, Blast Hole Drill. Locomotive, LPDT, LHD, Air Compressor, Pumps, Ventilation fan etc.	The information furnished on mining machineries appears to be in order.

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**Details of violations observed during current inspection and compliance position of violation pointed out**

Violation observed				Show couse position		
Rule NO.		Issued on	Compliance on	Rule NO.	Issued on	Compliance on
MCDR17	Rule 11(1)	01-JUL-22	25-JUL-22			
MCDR17	Rule 45(5) (ε	01-JUL-22	25-JUL-22			

**Date :**

**(Jangid G K)**

Indian Bureau of Mines