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DEC(SP)/68/20

16 June 2005

SNATCH 2 REVIEW NOTE – URD 1090

ISSUE

1. The conversion of an additional 312[1] SNATCH[2] 1/1.5 vehicles to SNATCH 2 standard building on the current contract for 312[3] SNATCH 2 vehicles.

RECOMMENDATIONS

2. The Approving Authorities are invited to approve:

a. The conversion of an additional 312 SNATCH 1/1.5 vehicles to SNATCH 2 standard at a not-to-exceed cost of £21.525[4]M (60% confidence) (outturn, VAT inc), giving a total project cost of £38.520M (VAT Inc) for the Manufacture phase of the project consisting of:

(1) £0.020M Indirect RDEL.

(2) £0.790M Direct RDEL.

(3) £20.715M CDEL.

b. A not-to-exceed In-Service Date (ISD) of Nov 05 (60% confidence) as defined by the delivery of 80 (Type A) fully supportable systems to the user[5].

c. The procurement and support strategies as summarised at paras 17-26.

And to note:

d. The key user requirements remain extant.

e. This RN seeks to build on a previous conversion of 312 vehicles with an ISD of April 05. It should be noted that this has slipped from Feb 05.

f. The capability requirement remains the same as the previous conversion with the scale and mix of vehicle types refined to reflect changes in the operational requirement as defined by D Jt Cap[6].

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[1] 197 x Type A are fitted with desert modifications. 115 x Type B are not fitted with desert modifications.

[2] SNATCH is the Protected Patrol Vehicle that has been deployed primarily in Northern Ireland since 1990. SNATCH 2 is part of a project to provide 3 types of protected vehicles under Project DUCKBOARD. Further details are in Para 11 and within the Category D BC (attached).

[3] 77 x Type A and 235 x Type B.

[4] Contracted price plus additional risks as outlined in Paras 27 and 28.

[5] 24 x Land and 56 x PJHQ.

[6] D Jt Cap/J5/PPV dated 21 Feb 05 stating capability requirement of 100 x VECTOR and 624 x SNATCH 2.

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g. The three-point [illegible] estimates for this review note of:

Manufacture Phase	[illegible]	[illegible]	[illegible]	[illegible] (CDEL+M, VAT Incl.)	[illegible]	[illegible]
	10%	50%	90%	10%	50%	90%
	0.550	0.610	0.900	18.085	20.315	22.355

h. The three-point time estimates for this review note of:

ISD	[illegible]	[illegible]	[illegible]
	Oct 05	Nov 05	Dec 05

i. The expected Cost of Ownership for this review note (COO) (VAT Incl. 50% confidence) of:

	Conc	Assess	Demo	Manu	CADM Total	In Service	Disp	CADMID Total
DPA		£0.210M	£0.400	£20.315M	£20.925M			£20.925M
DLO						£2.420M	£0.320M	£2.740M
FLC						£0.500M		£0.500M
Total					£20.925M	£2.920M	£0.320M	£24.165M
Total Cost of ownership								£24.165M

j. The increase in costs of £1.455M (CDEL, VAT Inc) for the previous category D Business Case.

k. The possible future requirement for an additional RN for the conversion of the remainder of the fleet.

TIMING

3. Priority. Land Rover and Otakar (production and assembly of chassis respectively) are in discussion with the Iraqi Police Force for the supply of 3000 similar vehicles under the PETRAEUS plan. Such an order would occupy all production facilities for 2005. In addition, NP Aerospace, vehicle integrators, are due to finish the present contract in August 05. The Iraqi order has currently stalled and with early approval of this review note it should be possible to secure timely delivery of this requirement.

PROJECT STATUS

4. The original Category D Business Case[8] approved the conversion of 312 SNATCH 1/1.5 vehicles to SNATCH 2 standard in April 2004. DCRS and IAB Sec accepted the upgrade of this Category D BC to operational emergency status to allow single-source acquisition to be adopted on the basis that it would be an operational precursor to a fully developed Category C BC. This Review Note now seeks to address the operational requirement as defined by D Jt Cap and recommends converting a further 312 vehicles.

5. The original BC has exceeded its approved costs and ISD for the following reasons:

[7] PFG have been engaged in the production of these figures and are reflected in the IA. The model used did not produce realistic figures due to the de-risking that has occurred through the current production run. These figures shown have been agreed between SUV IPT and PFG.
[8] DEC (SP)/68/20 dated 14 April 04.

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a. Cost. The original BC costs were precluded on the swap of armoured pods from SNATCH 1 to SNATCH 2 vehicles. As the design process was undertaken a number of small capability upgrades were requested by the users in order to cure a number of long term issues that had arisen from SNATCH 1 use. These included the provision of a spotlight, the provision of a call-sign indicator panel, a stowage box for the commander, an improved windscreen washer system for the removal of paint, and the provision of a suitable stowage solution for Public Order equipment. These enhancements, although minor, have increased unit costs.

b. Time. The increase in time has been due partly to the extra capability that has been designed into the vehicle. The vehicle has also under gone extra testing which has allowed the vehicle to have its gross vehicle weight (GVW) increased to

CAPABILITY REQUIREMENT

6. The requirement for SNATCH 2 to provide tactical mobility in order to allow Combat, Combat support and Combat Service Support elements to carry out their roles, as set out in the previous Category D BC, remains unchanged. The capability drivers identified in the Category D BC also remain extant including the need to replace the current SNATCH fleet which is suffering from poor reliability mainly through chassis failure and the logistic burden of petrol fuelled engines on deployed operations. The Out-of-Service Date for the current fleet of SNATCH 1 + 1.5 is March 2006.

7. Since last April, D Jt Cap[9] have analysed the TFR (Total Fleet Requirement) for PPVs (Protected Patrol Vehicles) and provided firm details of the appropriate mix of vehicle types in the PPV fleet. DJt Cap has stated the requirement and allocation for SNATCH 2 vehicles to be as follows:

Ser (a)	Location/User (b)	Current Deployment of all variants of SNATCH (c)	TFR[10] Qty of SNATCH 2 (d)	Finance Imposed Qty of SNATCH 2 (e)	Remarks (f)
1.	PJHQ	423	447	274	Type A
2.	HQNI	402	370	314	Type B
3.	Military Task 1.2+Trg	85	60	36	Type B
4.	Total	980[11]	877	624	

8. Funding levels have driven the capability of SNATCH 2 to the absolute minimum and the table above highlights the operational risk being taken against an already overstretched SNATCH 2 fleet. This gap will be lessened through the conversion of 312 SNATCH vehicles as recommended in this RN. The current operational risk is mitigated in the short-term by reallocation, double-hatting and prioritisation of vehicles by D Jt Cap.

9. As can be seen there is a difference of 356 vehicles between the financially imposed quantity and the current fleet. Depending on funding and future fleet requirements these SNATCH 1/1.5 vehicles will either be:

a. Converted to produce 100 x VECTOR;

b. Disposed of at their OSD of March 2006 or;

c. Converted to SNATCH 2 if a successful EP option is submitted and approved in 2006.

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[9] E-mail dated 21 Apr 05.

[10] TFR is a combination of a MS/SS enduring, Permanently Committed Forces, Trg and Sustainment.

[11] 70 x vehicles are held within the manufacture process.

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10. There is also a difference of 103 vehicles between the TFR requirement and the current fleet. This reduction in the number of vehicles to TFR levels will be offset by a coinciding increase of VECTOR vehicles.

11. The provision of VECTOR, SNATCH 2 and FORMAT vehicles all fall under the wider DUCKBOARD programme. Project VECTOR will provide a PPV to conduct activities in higher threat areas with increased payload, mobility and protection. Project FORMAT will provide EOD operators with a protected vehicle but with a substantially increased volume capacity on that offered by SNATCH 2 and VECTOR.

CAPABILITY DELIVERY

12. The ISD is based on the production of 80 Type A vehicles no later than Nov 2005 (60% confidence). The development and assessment of an up-armour appliqué kit, which could provide protection levels to [12] for SNATCH 2 is to be complete by September 2005.

OPERATIONAL ANALYSIS

13. Analysis has been conducted in support of SNATCH by DSTL.

14. The OA[13] concluded:

a.

b. Mobility – Improved on that currently offered by SNATCH 1.

c. Capacity – A capacity of

15. The cost-effectiveness modelling showed that the cheapest options to meet the SNATCH 2 and VECTOR protection requirements where to upgrade SNATCH 1 to SNATCH 2 and SNATCH 1 to SNATCH 3 respectively. No work was undertaken on the proportion of the fleet requiring protection at SNATCH 2 or VECTOR levels; however sensitivity analysis confirmed that a SNATCH 1 – SNATCH 2- SNATCH 3 evolution was a more cost-effective method of achieving VECTOR levels of protection than procuring a Military of the Shelf solution outright, even when the worst case assumptions for SNATCH upgrade costs where used. Further work will be completed that will inform the proportion of SNATCH 2 vehicles that should have their protection uplifted to VECTOR levels, this analysis will be reported in the VECTOR BC submission.

INVESTMENT APPRAISAL[14]

16. The following options were considered:

a. Do Nothing. The do-nothing option will result in a fleet size of 312 vehicles which only provides less than half of the capability stated by D Jt Cap. SUV IPT will not extend the safety case for the remaining SNATCH 1 vehicles due to increasing chassis corrosion problems and therefore an extended OSD would require chassis refurbishment which is covered by Option b. This option is discounted as the requirement for the capability has been stated by D Jt Cap.

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[12] is the industry standard for Ballistic protection. This equates to the defeat of

[13] OA has been a series of reports to DG (S+A). Approval for this Review Note by DG (S+A) articulates their approval of the OA. Once the report is bound it will be distributed to the approval authorities.

[14] IA was endorsed by Email – dated 6 May 05.

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b. Do Minimum. The do-minimum option allows a further refurbishment of 312 SNATCH 1 vehicles. The vehicles meet the requirements articulated by D Jt Cap. The cost of this option (inc SUV IPT STP Support Costs) as noted in the IA[15] is £23.850M.

c. New Procurement. The new procurement option allows for the purchase of 312 new vehicles which meet the articulated requirements. The cheapest cost of this option (inc SUV IPT Support Costs) is £61.45M.

Preferred Solution. It is recommended that Option b – Do Minimum be selected. This option meets the requirements stated by D Jt Cap and is affordable within the DUCKBOARD[16] provision.

PROCUREMENT STRATEGY

17. Two firm price contracts are now in place for the provision of the first tranche of 312 x SNATCH 2 vehicles as approved in the original Category D BC. These are with Land Rover (partnered with Otakar) for the chassis and NP Aerospace for the refurbishment, replacement and fitment of the armoured components. Limited system acceptance has been granted by DEC (SP)[17] and production is ongoing. The same contractors will be used for this tranche of SNATCH 2 conversions. This strategy has been approved by DD LAND Systems[18].

18. As Operation Emergency status was granted on the original Category D BC, PFG were engaged and their findings stated that the prices quoted were acceptable for this project. Banded extra quantity options have been considered and are part of the current contracts.

19. SNATCH 2 is legally viewed as a refurbished vehicle. This allows the fitting of an engine that complies with Euro III emission controls as opposed to the current Euro IV controls. These two factors combined requires the IPT to purchase chassis that have been created from major assemblies as Land Rover UK do not build running chassis. Otakar, partnered with Land Rover, assemble the running chassis and ship this to NP Aerospace for the integration of the pod. This process has been de-risked as the previous 312 vehicles have been built in this manner.

20. The 3000 vehicles that are potentially on order for the Iraqi police force share the current SNATCH 2 chassis. The complete vehicle cannot be procured due to emission regulations as stated above. It does, however, ensure that the industrial base for these components will be maintained and therefore the capacity to produce chassis for a potential SNATCH 3 will exist. This therefore means that the procurement strategy for VECTOR does not need to be addressed at this time.

SUPPORT STRATEGY

21. The Support Strategy remains the same as the original Category D BC but is outlined below for clarity.

22. General. SNATCH 2 will be subject to an in-service military support package backed by a limited 12 month warranty appropriate to the selected vehicle. A Logistic Support Committee (LSC) will be established under the chairmanship of SUV ILSM, to complement the tailored application of Def Stan 00-60 ILS. As the preferred option is to base the automotive parts of the major refresh on TUL/TUM(HS) (Truck Utility Light/ Truck Utility Medium (High Specification)) a significant amount of the support element is already in place and will require expanding to include the SNATCH 2 fleet.

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[15] Project DUCKBOARD – SNATCH refurbishment dated 21 Apr 05.
[16] Project DUCKBOARD aims to provide Protected Mobility for Combat, Combat Support and Service Support units.
[17] Meeting at NP Aerospace 6 Jan 05.
[18] Telcon 29 April 05.

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23. Through Life Management Plan (TLMP). SUV IPT will manage the project through out its life up to and including disposal. A full TLMP exists both for the current platform and the preferred TUL/TUM (HS) chassis. The TLMP will be updated throughout the demonstrations and manufacture phases.

24. Scheduling Maintenance. The operator will carry out level 1 to level 4 maintenance (to include routine servicing).

25. Warranty. A warranty of at least 12 months is required from date of equipment issue for all components of the system affected by the BC and its associated system modification. The terms of the warranty should allow repairs to be carried out by Service Personnel or their agents when operational requirements dictate, with the costs being claimed back at an agreed date.

26. Spares Support. As the preferred option is based on commonality with the TUL/TUM(HS) fleet, the majority of the spares will be provided through existing contracts. New items will be identified and scaled.

RISKS

27. This project has been significantly de-risked through the procurement of the initial 312 vehicles, which has enabled the DEC to request an approval at a confidence figure of 60%. The approval costs and delivery timeframes are based on actual costs/timeframes validated through the current 312 vehicle refurbishment program. An initial 68 vehicles have been deployed on Op TELIC where their performance has been proved to meet the requirements of this vehicle. The approval level would cover any additional increases in the cost of repair to specific armoured pods which have suffered excessive wear. There are identified risks, but with a low probability of occurrence, which would not be covered by the 60% confidence figure. The main driver of the >60% confidence figures is the risk of any increased cost of each chassis that might result from having to source from an alternative supplier if another buyer places an order with the existing supplier prior to the MOD contract amendment. In this instance, a further approval may be required for additional monies. This risk is minimised by amending the contracts as soon as possible.

28. Risk Management. As the vehicle is currently in production most of the risks regarding this project has been reduced or removed. The current top ten risks, as extracted from the risk register are at Annex A. The four largest risks and the mitigation strategies for these are as follows:

a. Chassis Production. The current contract with Land Rover who in turn have a contract with Otakar, chassis component manufacture and assembler respectively, is due to be completed by August 05. A contract amendment must occur during Jun 05 in order to allow the contractors to place orders for long lead items which allow the production lines to continue and will prevent them being decommissioned and which would delay the project for up to 4 months. They may also sign a contract with the Iraqi Police Force, as part of the PETRAEUS plan for 3000 vehicles which will occupy all production facilities for 2005.

b. Communications Installation. The original BC stated the requirement for each vehicle to be fitted with a single communications system. This was to be COUGAR for NI and Personal Management Radio for Op TELIC vehicles. The continuing uncertainty over the deployment of BOWMAN will not delay the production of vehicles. Scoping studies have been conducted to allow the subsequent fitting of BOWMAN to these vehicles but the

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vehicle will have the UOR[19] installation kit fitted. A cost of £2000 per vehicle has been allocated per Type A vehicle for BOWMAN integration. Type B vehicles (NI and UK Ops) will be fitted for and COUGAR and funding is allocated for this.

c. Documentation Production. User urgency has led to the deployment of these vehicles before full documentation delivery, however, as there is a large logistic commonality with the TUM(HS) fleet this was seen as an acceptable risk[20]. In consequence, the knowledge held by fitter sections is sufficient in the short-term, before the documentation is provided, to ensure support is available for this vehicle. Design freeze will be reached on the final variant in June 05 and this will allow the contractor to provide the full documentation.

d. Driving Licenses. As this vehicle has a GVW of a category C1 + E licence must be held to drive the vehicle. A waiver has been granted to allow category B licence holders to drive this vehicle until Jan 06. HQNI is working on the conversion plan for its drivers. In addition, the Force Development Cell, Director of Infantry has written to DI (Trg Pol) to advice them on this requirement and a reply is awaited. This situation is not unique to SNATCH 2, FCLV requires a similar license, and the scale of the problem will only increase as more standard equipment is carried per platform and therefore the policy on driving license acquisition must be addressed.

FUNDING AND AFFORDABILITY

29. Funding Assumptions. The assumptions used to calculate the three-point-estimates in the initial BC for capital costs were based on the production of Type B (UK/European) vehicles. As there are more Type A (desertised) vehicles contained within this review note there is a direct increase in costs due to the extra equipment (air-con, thermal blankets) that must be fitted. The unit cost delta between types A and B of £0.017M has resulted in the increase in the projected cost for these 312 additional vehicles.

30. EP05 Provision. This project is affordable within the EP provision following a successful EP05 enhancement. Funding for this project will be found from the DUCKBOARD line which has sufficient provision to cover this conversion as well as the planned future procurement of VECTOR and FORMAT vehicles. It should be noted that VECTOR and FORMAT provisioning are worked estimates.

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[19] UOR IO4049C is currently equipping SNATCH 1.5 with a BOWMAN fit. It is anticipated to extend the safety case to include SNATCH 2 until EP funded activity is completed.

[20] 1 RHF/G3000 states that a SNATCH 2 that was attacked by an IED was roadworthy within 7 days which included new fuel pump and other automotive parts.

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RDEL Baseline/Requirement

	05/06 £M	06/07 £M	07/08 £M	08/09 £M	09/10 £M	10/11 £M	11/12 £M	12/13 £M	13/14 £M	14/15 £M	Total £M
DUCKBOARD EP05 Baseline	2.755										2.755
Original CAT D SNATCH 2 BC Requirement	0.300										0.300
SNATCH 2 RN Requirement	0.810										0.810
VECTOR Requirement	1.000										1.000
FORMAT Requirement	0.645										0.645
Variance	0.000										0.000

CDEL Baseline/Requirement

	05/06 £M	06/07 £M	07/08 £M	08/09 £M	09/10 £M	10/11 £M	11/12 £M	12/13 £M	13/14 £M	14/15 £M	Total £M
DUCKBOARD EP05 Baseline	36.337	22.000	13.366								71.703
Original CAT D SNATCH 2 BC Requirement	9.625										9.625
SNATCH 2 RN Requirement	15.775	4.540									20.315
VECTOR Requirement	10.937	9.063									20.000
FORMAT Requirement		8.397	13.366								21.763
Variance	0.000	0.000	0.000								

31. STP Provision. The following table shows the STP provision, as supplied by SUV IPT and endorsed by Army RP, for SNATCH 2 and demonstrates its affordability:

	05/06 £M	06/07 £M	07/08 £M	08/09 £M	09/10 £M	10/11 £M	11/12 £M	12/13 £M	13/14 £M	14/15 £M	Total £M
RN Requirement	0.410	0.433	0.433	0.437	0.437	0.437	0.437	0.105	0.105	0.105	3.339
SNATCH STP Baseline[21]	1.097	1.165	1.163	1.173	1.173	1.173	1.173	0.283	0.283	0.283	9.973

PRESENTATION

32. This procurement is subject to reporting restrictions concerning armour specifications, payload, and performance details. Press lines will be drawn up in consultation with DCRS but no reporting has occurred since the introduction of vehicles from the Category D BC.

For DEC (SP) for SUV IPTL

[21] This baseline is for the fleet of 980 vehicles.

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ANNEX A
DEC (SP) 68/20
DATED 16 JUN 05

TOP TEN RISK REGISTER FOR SNATCH 2

Definitions	Low	Medium	High
Probability	Low likelihood of occurrence (<20%)	Low likelihood of occurrence (20 to 50%)	High likelihood of occurrence (<50%)
Performance	Impact on minor functionality	Impact on bringing supported and functional vehicle into service	Key functionality or supportability not being available by ISD
Cost	Less than 5% increase in project cost	5% to 10% increase in project cost	Greater than 10% increase in project cost
Time	Less than 2 week impact	2 – 4 week impact	Greater than a month and likely to impact ISD

Risk ID	Risk Type	Date Identified	Initial Probability	Initial Impact	Initial Risk	Risk Description	Proposed Mitigation	Agreed Action	Final Probability	Final Impact	Final Risk	Date Closed
1	Time	10 June 2005	HIGH	HIGH	RED	Contracts for continuation delayed past the lead time for contractors to continue manufacture following current contracted vehicles. Resulting in loss of production staff due to being laid off	Contacts or letters of intend to be placed ASAP to allow contractors to order long lead time items					
2	Cost	09 December 2005	HIGH	HIGH	RED	Cost of vehicles not clearly defined due to specification changes required for 3 rather than 1 variant	Scope the cost and impact for each variant and additional items required.	Define technical specification for each variant	MEDIUM	MEDIUM	[illegible]	
3	Performance	16 September 2004	HIGH	HIGH	RED	Inability to meet DEF STAN 59-41 (EMC)	Review requirement with Technical authority	EMC testing to be conducted to test specification fitting to specific installed equipments	MEDIUM	MEDIUM	[illegible]	
4	Performance	10 May 2005	HIGH	MEDIUM	RED	Power distribution requirements not clearly defined due to amount of comms/electronic kit installed	Hold meeting with all comms/electronic kit installed and clearly define requirements	Agreement met to provide dual voltage power distribution with spare outlets for future proofing	LOW	LOW	[illegible]	
5	Time	16 September	HIGH	HIGH	RED	Long lead time of	Review component	Minimum Order	MEDIUM	HIGH	RED	

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Risk ID	Risk Type	Date Identified	Initial Probability	Initial Impact	Initial Risk	Risk Description	Proposed Mitigation	Agreed Action	Final Probability	Final Impact	Final Risk	Date Closed
		2004				bought in items to NP Aerospace	suppliers and seek further sources	quantities to be placed to assure all quantities of each variants are covered				
6	Performance	09 December 2005	HIGH	HIGH	RED	Inability to support vehicles in service due to lack of technical documentation	Provide interim publications prior for issue with the NI variant prior to supply of AESP's	SUV IPT to provide help desk facilities in support of interim publications	LOW	MEDIUM	[illegible]	
7	Time	10 May 2005	HIGH	HIGH	RED	Inability for contractors to provide NI with sufficient vehicles to fulfill minimum marching season requirements	Closely monitor where vehicles are input into the programme to assure minimal clone vehicles are manufactured and provide NI with all of the production until they meet their minimum requirement	Action proposed mitigation	MEDIUM	MEDIUM	[illegible]	
8	Performance	10 May 2005	MEDIUM	MEDIUM	AMBER	Inability to deploy vehicles at increased GVW due to delayed trials of Suspension and brake system	Assure vehicles are inititially deployed at lower GVW by informing users and trial at earliest opportunity	ESPD and vehicle aide memoirs provided with vehicles.	MEDIUM	MEDIUM	[illegible]	
9	Time	10 May 2005	MEDIUM	MEDIUM	AMBER	Different communications requirements for various threatres of operation	Remove standard communications fit from vehicle technical specification and make into an installation intructions for after production fitment	Action proposed mitigation	LOW	LOW	[illegible]	
10	Time	10 June 2005	MEDIUM	MEDIUM	AMBER	Inability for the MoD to provide sufficient donor vehicles to allow a constant rate of production	Closely manage project inputs or Manufacture a quantity of new pods to replace the vehicles lost on operations to allow production to continue during any shortfalls in donor vehicles	Closely manage project input of vehicles to assure uninterupted production	MEDIUM	LOW		

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